GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS

ILLUSTRATED SEMI-MONTHLY

Published by THE A. I. ROOT CO. $1.00 PER YEAR MEDINA, OHIO

Vol. XXXI. AUG 15, 1903. No. 16

I AM SURE Wilmon Newell will take it kindly if I suggest what I believe to be an improvement on his entrance-closer, p. 675. Simply a piece of wire cloth with folded edges, large enough to cover the whole of the entrance, and project an inch upward, and then a piece of lath to nail over it. It costs less, and gives more air.

AFTER ONE HAS been stung a number of times, you say, Mr. Editor, p. 668, "While the pain is just as acute, the swelling and consequent fever do not appear—at least to only a very moderate extent." I think it may be added, for the comfort of the novice, that the acute pain does not last nearly so long after one has had enough stings. [Exactly.—ED.]

REFERRING to wired frames, George W. Strangway asks (page 675) what I have to say with regard to Mr. Doolittle's chat on page 426. Sound—just as I would expect any thing to be from Mr. Doolittle. But I don't see a word in it to hint that Mr. Doolittle has failed to get straight work with wired frames, nor, in fact, any thing to show variance between us.

DIFFERENCE in *locality* is a real thing, no matter how much it is laughed at. Mr. W. K. Morrison, p. 562, says, "When the swarming season arrives, the second chamber with drawn combs is added *from below*. This is a damper to the swarming fever." In this locality the swarming season does not arrive till after work begins in sections. Very rarely does a colony think of swarming before, most of the colonies not getting the fever till the season is well along.

THIS YEAR I have had a number of brood-combs filled with honey that would have been better in sections. I got the honey transferred into sections by giving these combs of honey instead of empty combs to shaken swarms. So far as I could see, these combs of honey were filled just as fast with brood as if empty combs had been given, even if the whole brood-chamber was filled with honey. If the honey was sealed I did some uncapping; but that may not have been necessary.

I WONDER if ye editor speaks by the card (page 675) when he says smoke from sound hard wood is less pungent than that from rotten wood. I always supposed that the sounder and harder the wood the sharper the smoke. [Yes, I was speaking from practical experience of a few days before. I had been testing some new smokers, trying various kinds of fuel, and noted the fact particularly that hard wood did not give the volume of smoke that was given off by porous rotten wood. In fact, all rotten wood is porous—more so than ordinary hard sound timber. If you will come to Medina some time I think I can make your eyes and nose smart more from rotten wood than from any hard wood you can scrape up.—ED.]

A CONFESSION of change of views with regard to colonies that "never think of swarming" is made by the editor, p. 559. Well, I have also a confession to make. I've chased so long and so hard after the will-o'-the-wisp non-swarming that I have become somewhat winded; and although I am still keeping up the chase, it is with a slackened pace; and this year I've done more at shaking swarms than for several years past. Although not half of them were satisfied to make no subsequent effort to swarm, that doesn't count so very much against the plan, for this has been the worst year for swarming I ever knew. [It appears we are now pretty nearly of the same mind, although a month or so ago we were quite far apart in our views.—ED.]

W. K. MORRISON, p. 672, says "the best distance to space the frames is 1¼ inches from center to center. Even 1⅛ is suffi-

cient." That wouldn't do in as cool a climate as this. The smallest space I've ever found between combs filled with sealed honey was ¼ inch. More room is found, and is needed, between combs of brood, I think, because in so small a space as ¼ inch there can not be enough bees to keep up the necessary heat. With new comb, 1¼ spacing would leave ⅜ between brood-combs, and with combs old enough there would be only ¼ space. [A 1⅜ spacing seems to be about right in this climate. It is a very nice compromise between the widest spacing and the narrowest. A spacing of 1½ inches results in combs too bulky and too much drone comb. Some years ago we had quite a number of reports on this, and the general consensus of opinion favored 1⅜.—ED.]

"ONE OF THE MOST important *secrets* in the production of comb honey," says W. K. Morrison, page 673, "is to have no drone comb in the brood-chamber, so that, when sections are put out, the bees rush up intending to construct drone comb." He also favors drone foundation in supers. In this locality I shouldn't like to have the bees think they could have drone comb in supers unless there be some deeper secret about it than I have yet learned. If the bees rush up to build drone comb the queen will rush up to lay there unless excluders are used, and I'd rather avoid the trouble and expense of excluders. Even with excluders there is an objection. If the bees get it into their heads that drone brood is to be reared above, they will hold cells open for that purpose. I have known cases where worker foundation did not entirely fill the section, and a corner would be filled out with drone comb kept empty, evidently awaiting the queen, while all the worker part was filled out with honey.

ON PAGE 674 I am quoted as saying that queens in a ball are never stung. I wonder if I ever said that. I think I can make bees sting a queen in a ball, always. All I need to do is to poke them lively with a stick in the effort to separate the queen from the ball, or to blow *hot* smoke upon them. I wonder if I didn't say that a queen is never stung in a ball *when the bees are left entirely to themselves*. Mr. Martin "gave them a few whiffs" of smoke. If that was hot smoke I should most certainly expect the queen to be stung. [I think I found nearly all the references bearing on this question; but in not one of them is there a suggestion of a limiting clause as given in your italics. Turn to pages 224, 395, and 592. But I shall have to make a little correction. It was not you who were so positive in the matter. It was our friend C. E. Woodward. But the evidence already produced shows that bees do sting the queen in the ball. I do not, however, agree with you that molesting the ball in trying to save the queen makes the bees any more anxious to kill her by stinging. The reason why the queen is seldom stung is because so many bees are picking at her that it is not possible for them to get their stings to her. The heads all point to her in the same direction, and their effort seems to be to try to pull or tear her limb from limb; and they do sometimes succeed in pulling her legs off and gnawing the wings. —ED.]

OF 18 COLONIES shaken in the Wilson apiary, just half made no offer to swarm afterward; 3 started queen-cells within 10 days, and upon these being destroyed they started none afterward (which is, perhaps, not an unusual thing in the experience of some others); 4 have been found with queen-cells about every 10 days; 2 were found queenless 10 days after being shaken—either they swarmed and lost their clipped queens, or else the queens were accidentally killed. Five were shaken in the Hastings apiary, and every one of them swarmed or tried to afterward. They were a little more crowded for room in the Hastings apiary. [At our Harrington yard we had furious swarming; and yet of the colonies we had shaken, I do not remember the number, not one offered to swarm; and one or two colonies that acted as though they were about to swarm went quietly to work after they were shaken, and behaved in every sense as if they had swarmed in the natural way. Did you hive on starters, full sheets, or on combs? We used full sheets, with the results already given.—ED.]

After copying what has been said in this journal about the destruction of our basswoods, a French bee-keeper says, in *Revue Internationale*, that the governments of Europe have been obliged to take hold of the matter and regulate the cutting of trees. It is well known, he says, that the destruction of forests is attended with many evils. He thinks the Americans should profit by the experience of Europe. The destruction of trees in Oregon and Washington, as now going on, will soon, he warns us, bear bitter fruit.

AMERICAN BEE JOURNAL.

Concerning formalin, I copy the following interesting facts from an editorial based on information furnished by Schering & Glatz:

It is probably the most destructive germicide known, although having little effect upon animals or man, the fumes being breathed, it is claimed, with little inconvenience. Yet it can hardly be a wholesome article of diet, for the doctors of Chicago object bitterly to its

use in milk to keep it from souring, saying that such milk is death, slow but sure, if continuously fed to babies.

It must not be understood that formalin is a cure for foul brood. All that is claimed for it is that by its use foul-broody combs may be disinfected so that they may be safely used in a healthy colony. Even this is a very important matter, as thousands of dollars have probably been lost by the burning of such diseased combs.

The combs are submitted to the effect of the gas, and the most convenient way to use it is probably by means of formalin pastils vaporized in Schering's formalin-lamp. The lamp costs $1.75, including 40 pastils, and pastils cost 30 cents for a box of 20.

For reliable disinfection of rooms in dwellings, one pastil is used for every 18 cubic feet. If it can be used at the same rate in disinfecting combs, a single pastil ought to be enough to disinfect 100 combs piled up in hive-bodies, costing only 1½ cents. Actual practice, however, will be necessary to determine the minutiæ, and to ascertain to a certainty that the disinfectant absolutely destroys all the spores.

BRITISH BEE JOURNAL.

In addition to what is said in GLEANINGS, p. 688, last issue, the following will be found to be of interest:

The scheme of insurance for bee-keepers promoted by the British Bee-keepers' Association has passed its first year with satisfactory results to all concerned. Only one case came up for adjustment during the year, and that was promptly and satisfactorily settled. A new policy, covering the period between August 1, 1903, and August 1, 1904, has now been obtained, and premiums for risks under this policy have been payable since July 1.

It is expected that the number of hives insured will be doubled this year, and we sincerely hope this expectation will be realized. Indeed, there is no reason why 50,000 hives might not be covered, to the advantage of the bee industry as a whole.

June was a frosty and backward month in England. "June 18, gave syrup; June 20 ditto," are among the records one bee-keeper says he put on his hives.

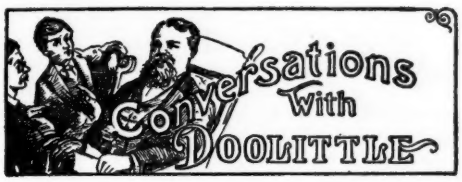
Concerning the Weed foundation, Mr. W. Woodley, of Beedon, says:

The great advance of the Weed foundation on the old style of dipping the sheets of wax before being pressed into foundation is shown principally by the few complaints from users. We seldom now hear the cry that "the bees would not work it out into combs." Nor do we hear of any objections to the combs of which Weed foundation forms the midrib. Surely these are points of great importance to both the producer and the consumer of comb honey. I am exceedingly well pleased with the grand parcel of extra thin super foundation received from the British Weed factory at Holme, in return for my year's parcel of wax—it was simply perfect.

AUSTRALIAN BEE-KEEPER.

Here is something which seems to me to be in the right line. I have suggested it more than once in times past:

In connection with the production of beeswax in the West Indies, a suggestion has recently been made that inasmuch as muscovado sugar can now be purchased throughout the West Indies in wholesale quantities at from 3s. to 4s. per cwt., while beeswax is worth about $38 per cwt., and taking into consideration the fact that the honey-flow does not exceed four months of the year in the most favorable localities—it would pay well to feed the bees nearly the year round either with dry sugar, syrup, or molasses, making the honey produced a by-product and the wax the main product. It is said that it takes about 10 pounds of sugar to make 1 pound of beeswax; therefore should the suggestion prove a practical one, it would be a great boon to West Indian bee-keepers, who would no doubt then import a species of bee from India which is especially suitable for wax-production.



HOW TO BUILD UP A REPUTATION(?)

"Good afternoon, Mr. Doolittle. Hard rain we had this forenoon."

"Yes. So much rain and so few flowers so far this year, since our early drouth, that bees have not stored the usual amount of white honey. My crop will be scarcely half of the average year. How have your bees done, Mr. Jones?"

"We had quite a basswood yield, and I shall have a good crop considering the poor condition my bees were in when the drouth ceased. I understand basswood did not bloom in this locality."

"No, we had no basswood buds, on accouut of the hard freeze killing them—something I never knew before during the 34 years I have been keeping bees. If we could have had basswood bloom added to the yield from mustard, teasel, and red clover, undoubtedly quite a large yield would have been obtained."

"I came over to have a little talk with you about putting my name and address on cases of honey when the same is to be shipped on commission. Would there not be an advantage in so doing?"

"Possibly, if the commission merchant would allow you to do this."

"Do you think he would object?"

"I think so. For several years I sold my honey to a dealer in Syracuse, and he insisted on having the honey brought with no marks of any kind on the cases save the gross weight, the tare, or weight of the crate, and the net weight of the honey. When I asked him the reason for this he showed me stencil plates bearing his own name and address, and said, 'I put my name and address on every case of *really fine* honey which I buy, so as to build up a trade in honey; and with the inferior grades that came with any lot I leave the stencil-mark off, so that none but the very best bears my name, and thus I am gaining a reputation year by year which is growing constantly. If I allowed you to put your name on the cases it would not help *me* a bit; and as long as *you* sell to me each year it could be of *no benefit* to you.'"

"Did you believe it?"

"Not at first; but after a year or two I saw that his line of reasoning was correct; for every year gave him a larger range of customers, so that soon he was handling honey by the tons instead of by the hundreds of pounds. He was removed by death, and after this I wrote to commission merchants asking them if they would allow me to put my name and address on each case."

"Did they allow you to do this?"

"Some of them said no, and some said I had better put my name on the sections, if I did any thing of the kind, but advised leaving my name off entirely."

"What course did you pursue?"

"I purchased a rubber stamp with the words "From G. M. Doolittle, Borodino, N. Y.," on it. I could now, in a moment, put my name and address on any thing I wished, from a postal card to a bee-hive. Outside of the object intended, I have found this stamp of great benefit to me in many ways, and I would advise you to procure such a stamp anb see how much in time, money, and temper it will save you."

"Where can they be purchased?"

"I believe the A. I. Root Co. can furnish such stamps."

"Did you use it on your honey?"

"Yes, on the very best, the same as did the honey-merchant who died, leaving it off all second quality and poorer grades."

"Did you put it on the crates or sections?"

"On the sections."

"Was there not a great amount of work to this?"

"Not as much as would appear at first thought; for after the sections were all in the shipping-case, and before the cover was put on, it took only a moment or two of time to stamp all the sections in that case, tnus letting the consumer know by whom such honey was produced, while the commission merchant received all the credit with the retailer."

"What was the result?"

"Letters inquiring if I could send small lots of the same kind of honey to consumers, for the honey bearing my address was the finest of any section honey ever purchased."

"Of course this made a market for all of your best grade of honey."

"Well, not exactly."

"What was to hinder?"

"Two things—yes, three."

"What were they? I can not think of any."

"First and foremost, these parties mainly wished me to ship them honey to be paid for on receipt of the same; and after being beaten out of two or three lots I refused to send any more in that way, for this loss brought the price of the whole down to little if any more than I obtained through the commission merchant. Second, the deal was generally for only a case or two, some even wanting me to ship in half-cases; and these little shipments proved far more liable to breakage than large shipments; and unless paid for in advance a reduction from the contract price was requested, and from this some dissatisfaction arose to both parties, so that there was little pleasure in such a transaction. Third, with the demand for payment for the honey f. o. b. cars, came a large amount of what usually proves useless correspondence, for most of the parties did not feel disposed to purchase honey in that way, so that, owing to these three things, I soon settled to the conclusion that it was more profitable in the long run to keep my name and address off all honey shipped on commission; and for the last five pears I have sent all that I could not readily dispose of in my home market to commission merchants in Boston, New York, and Philadelphia, without letting anybody but the commission merchant know where the honey came from."

"But did you not admit at the start that there might be an advantage in putting my name and address on the shipping-cases?"

"Yes; but I qualified the matter by using the word *possibly*. There is a possibility that, in your locality, and with more time at your command, you could do better than I have done. Then, again, if you can get your commission merchant to allow you to put your name and address on the cases instead of on the sections you could deal directly with the retailer, and in this way receive larger orders than that from consumers."

As will be noticed elsewhere in this issue, I took a flying trip up through Wisconsin and Michigan to look up the basswood situation for sections; and owing to my absence from home I could not prepare my usual answers to Straws in last issue. I make this explanation as some may wonder why the usual footnotes were omitted.

A. I. ROOT AND HUBER JUST AS THEY WERE STARTING ON THEIR THOUSAND-MILE TRIP.

ELSEWHERE in this issue will be seen a snap-shot of the oldest and youngest of the Root Co. in their brand-new automobile, just as they were starting out on their long trip among bee-keepers through Ohio and Michigan. Huber, as will be seen, is the chauffeur, and A. I. R.—well, he is going to have a good time. He is just as happy as the small boy with a new pair of boots. At first the senior Root was expecting to go with Mrs. Root; but we younger Roots and Rootlets, as you know, insisted that that should not be, as it would not be wise—might run into a ditch or over an embankment. So it was arranged that Huber was to post himself up and become a professional chauffeur, and this he has done to such an extent that the trip, barring one or two breakdowns, has been a success. On my trip through Michigan I met the pair after they had been over hundreds and perhaps a thousand miles of journey. Both of them

looked healthy and well, for the outdoor air and the enthusiasm of flying through it, as it were, proved to be a wonderful tonic.

MR. FRANCIS DANZENBAKER AT MEDINA.

MR. FRANCIS DANZENBAKER, of Washington, D. C., inventor of the Danzenbaker hive and system, is here again on one of his annual visits. He appears as active as he did a year ago, and looks more the picture of health to-day than I ever saw him. He believes in plain food, in scientific physical culture, and all his life has been an abstainer from any kind of narcotic, drinking neither tea nor coffee, and tobacco he never used. He believes that he has his hive as nearly perfect as possible, and expects to devote the remainder of his days (and he is good, the doctor says, for twenty years) to the production of fancy comb honey, for he practices what he preaches—uses his own hive and system.

Speaking about physical culture, I was surprised to see how easily our friend at 66 was able to go through with the simple exercises. His mind is as clear as the average man at the beginning of his prime; and he attributes this good health to his abstemious habits, and bathing.

STRAY RUNAWAY SWARMS AT MEDINA, AND HOW THEY ARE CAUGHT.

NEARLY every season, when swarming is on, farmers will bring word that a swarm of bees is hanging from a tree on their premises, some two or three miles out, and that if we will go after them we can have them. Or word may be telephoned in, with the polite intimation that we can have the bees for a small "consideration." As a general thing we are rushed with work at our own yards, and do not care very much about chasing around the country for stray swarms. But they must be taken care of, especially if they are blacks or hybrids, for we can not have swarms of either within half a mile of our own yards. It hardly pays to send a man in a buggy, so of late years we have been sending out one of our boys with a potato-sack, a pair of pruning-shears, a smoker, bee-veil, gloves, etc., on a bicycle, to go after them, bag, and bring them home. And right here the bicycle serves a very excellent purpose. The trip can be made quickly; and as the weight of the bees themselves rarely exceeds eight or nine pounds, they can readily be carried.

One of our men, Mr. Geisinger, had just returned from one of these trips. I told him to wait till I could photograph him, and the result is shown on page 723. The bicycle he rides is a regular chainless, having a carrier attachment over the front wheel. The bees, when bagged, can be set down in this carrier, or can be held with one hand while the other is used for steering. But if the swarm is a heavy one, it would be more practicable to carry it resting on the handle-bars.

There is nothing better for the purpose than an ordinary potato-sack made of burlap. It has a wide mouth, and can usually be slipped around the bees, and the mouth of the sack tied before the limb is even cut. And right here the pruning-shears are brought into requisition. It will be noted that one of these implements, as well as a small-sized Corneil smoker, is hooked into the belt. When so equipped with bee-veil and long-sleeved gloves one is prepared for almost any emergency.

GETTING SWARMS DOWN FROM TALL TREES WITH A SHOTGUN.

ONE of our subscribers, Mr. Isaac Alexander, of Waldenburg, Ark., a view of whose shedded apiary will be found on p. 720, noticing what I said on p. 623 about getting swarms down from tall trees, wrote he had been very successful in the use of a shotgun. One swarm had clustered up a tall tree, near the crotch, where the limbs were large. After a good deal of effort he managed to reach them and scoop or scrape them off. But they took wing and clustered still higher. Again he took after them and shook them off. Again they clustered higher still, until they got up beyond his reach. The idea finally struck him to use a shotgun. This he did by sending five charges up among the bees. Whether there was any mendacity in this act or not he does not say; but the effect of the bombardment fired up *their* mendacity, and they stung every thing in sight. But he says they finally clustered lower, and he then hived them.

Mr. W. F. Marks, of Chapinville, N. Y., had a similar experience. The bees clustered too high for him, on a big tree, or, rather, he did not care to climb after them. As a matter of curiosity he fired a charge of shot up among them, with the result that they were completely disorganized, and came down. He subsequently hived them from a more get-at-able position. Of course, it is perfectly plain that the shot would kill a good many bees; but it is better to lose a few bees, perhaps, than to lose them all.

CANDIED HONEY IN PAPER BAGS IN HOT WEATHER.

OUR readers will remember that we secured a small kegful of candied alfalfa honey, put up in bags by R. C. Aikin, of Loveland, Col. When these were first received they were as hard as bricks, the honey so stiff and bricklike that it was difficult to run a case-knife down into it. The question was raised last winter whether or not honey put up in this form would not become soft, leaky, and dauby during warm weather—that is, left on the shelves. To determine this point I put one sample up on a shelf in my office. It faced a north window, and of course the direct sunlight could not by any possibility get on to it. To-day, July 30, as I was looking over some of the other stuff on the shelves I noticed

crystalline drops of honey oozing out of one side of this test-bag, and on picking the package up I was surprised tr see that the contents had become as soft as summer butter. The little white globules of honey oozing out all around the bag, pushed themselves through the pores of the paper in spite of the paraffine covering.

On the other hand, we have some candied honey put up in glass *sealed*, that is *almost* as solid as it was last winter; and I naturally supposed that candied honey that was dry and hard in winter (whether sealed or not) would remain so in the bags. The explanation of this is doubtless due to the fact that candied honey as well as liquid honey absorbs a large amount of moisture from the atmosphere. This bag of candied honey had been open some months previously, to determine the consistency of the honey, and the top had been folded back, but probably not tight enough to keep out the moist air.

A large trade has sprung up in paper bags for candied honey. It is possible that some will be disappointed, and blame the Root Co. as well as our friend R. C. Aikin. But if the honey is sold within six months from the time it is put up, it will probably escape the hot weather; or if the top of the bag is sealed hermetically tight with sealingwax, or any substance that will make an air-tight sealing, the honey will probably remain in the solid condition, so as to stand any amount of rough usage during the hottest weather.

I make this as a suggestion to those who have purchased the bags, for it is well to err on the safe side if we can. No harm can possibly come from making an air-tight sealing; and perhaps it may be a wise precaution, after the bags have been filled, the honey candied, and the top sealed, to treat the whole package further with another coat of paraffine by dipping it into hot wax—not *too* hot.

A SAMPLE OF THE EVERY-DAY QUEEN-CELL WORK AT THE HOME OF THE HONEY-BEES.

A MONTH or so ago Mr. W. H. Harber, of Youngstown, O., an enthusiastic bee-keeper, stayed with us several days. He said he desired an opportunity to learn modern bee-keeping, and requested the privilege of following the men around, asking questions as to why this, that, and the other thing were done, all of which was freely granted. He brought with him a kodak, and while here he took a number of snapshots. Among the number is a very excellent picture showing some queen-cells reared from wooden cell cups. This we reproduce on page 725, not as a sample of the best work our men can do, but of what they have been doing day after day. These wooden cups are nothing more nor less than little cylindrical plugs of wood about ¾ in. in diameter, and the same in length, in one end of which is bored a hole about ⅜ inch deep, of the shape and size of a queen-cell. Into this is put a plug of soft warm beeswax. A forming-tool is forced down into the hole, reaming out a nice queen-cell inside of the wooden plug. A lot of them are prepared in this way, and then these are stuck, by means of nail-points, on to the extra cross-bar. They are next grafted with royal jelly and young larvæ from a select mother. A cage made of perforated metal, large enough to slip over the whole lower portion of the frame, is then slipped over the whole, when it is put into a queenless colony, as we find cells are started better in such stocks than in an ordinary upper story. After the cells are once begun they may be put into an upper story of a strong colony for final completion.

If you look carefully you will see where the perforated-metal cage already mentioned was slipped over these cells, by the line of wax or propolis that is deposited along the sides of the false cross-bar. Sometimes we used a cage of this kind, and sometimes we used a cylindrical Stanley cage, such as we illustrated on page 446, for we have been testing this in an experimental way, and so far are well pleased with it. Instead of using Stanley's gun-wads as a stopper for these cages, we employ the wooden plugs, which we can use over and over again for cell-building. As these plugs are of wood, they can be very readily handled—can be shoved into the sides of a comb, or can be used to stop up a cylindrical cage, either of queen-excluding metal or of ordinary perforated metal, which neither bees nor queens can go through.

It will be interesting to note in this connection that our men use a glove, to the wrist of which is sewn an ordinary straw cuff. The fingers of the glove are cut off at the tip. This gives good protection to the hand and wrist, and at the same time allows the use of the fingers for the purposes of sensitive touch.

FERTILIZING QUEENS IN SMALL NUCLEUS BOXES ATTACHED TO THE SIDE OF A SMALL COLONY.

ON p. 536, June 15, one of our correspondents told how he had succeeded in getting queens fertilized in small section boxes attached to and made a part of a strong colony run for extracting. This plan is substantially the same as was advocated by Swarthmore a year ago. I promised to give it a test in our yards, and report. I had forgotten all about the matter until I received the following communication from Mr. Doolittle. Before I tell how the thing worked I will give his letter right here:

Friend Root:—Have you tried the plan of rearing and fertilizing queens in full colonies as given on p. 536? You said you were going to. I tried it quite extensively on four colonies, and it proves, as I half expected, to be the same as fertilizing in upper stories over a queen-excluder, only that, so far, I have not succeeded in having a *single* queen thus fertilized. They take them and keep them all right till they are from three to six days old, when the bees begin to persecute them, and finally kill them or drive them off as they do drones. I hope you have tried and will report.

Borodino, N. Y., Aug. 4. G. M. DOOLITTLE.

Yes, we tried the plan, but it was a most complete fizzle. Like our friend Doolittle, we did not succeed in getting even *one* queen fertilized. I have no doubt it can be made to work under *some* circumstances; but because of its unreliability we feel that we can not afford to fuss with it. We succeed best with a nucleus, not less than one full-sized L. frame, and two are better. The plan that we used last year successfully, and are using this year, is to take an ordinary eight-frame upper story and divide it off into three compartments lengthwise. The bottom is covered with wire cloth. Each one of the compartments has a small entrance — one on each side, and one in the end for the middle compartment. A frame of brood and a comb of honey with bees are put into each compartment, and the same is put on top of a small colony. The advantage of this arrangement is that it saves room in the yard, puts the nuclei up at a convenient working height, and during cool weather or at any other time permits the heat of the strong colony to rise up and keep warm the little cluster above. These nuclei can be treated in very much the same way as the ordinary two-frame nuclei, and cells or virgins that are given to them will soon develop into laying queens.

While some of our friends have been able to make a small nucleus work successfully, we have not. Even so successful a queen-breeder as Doolittle has failed. But even if he and ourselves could both make it work, after all would it pay? Those of us who have a large queen-trade must have a plan or method that will work, not once in a while, but *all* the time and under all conditions. When orders come in for queens, they must be filled. It does not do to tell a customer, when the season is at its height, and all conditions are favorable for rearing queens, that he will have to wait three weeks or until the queens can become mated. If his hive is queenless, he wants the queen *right now* or never.

SCARCITY OF BASSWOOD FOR SECTIONS; FOREST-FIRES AND THE WANTON WASTE OF OUR VALUABLE TIMBERS.

WE have been out on little trips looking for basswood for sections another year; and while there is possibly ten years' cutting left, the territory where this useful timber grows is so limited that, with the big mills that are now cutting it—millions and millions of feet of it every year—it will be only a short time before we shall have to look to something else for sections—possibly go back to the old four-piece or nailed section.

Some years ago a fad was started for what was called the "snow-white" section; but if bee-keepers in the future shall be able to get a fair quality of cream and white, they may consider themselves fortunate; and, what is more, the price will necessarily be considerably advanced, owing to the sharp advance in the price of the timber from which it is cut. We are now paying more than double for basswood than we did a few years ago; and the rush for this material, now that pine is so scarce, shows that there will be further advances soon. As it is, white stock is getting to be so scarce that the manufacturers will have difficulty in getting enough of it for No. 1 sections, and will be compelled to put in a large percentage of cream. Such lumber is fully as good—just as tough as white; indeed, I have always argued that the cream section shows off honey *better* by contrast than the so-called "snow-white."

There is, however, what is called the heart basswood, of a reddish color, that should not be confused with ordinary cream lumber. Such timber would hardly do for sections. It is too porous or punky.

Our people have scoured the country for basswood timber; and the alarming fact is, that pine, having become so scarce, basswood is now being used very extensively for purposes of building. The furniture-makers, house contractors, basket-makers, and box-makers are slashing into the wood at a rate that will almost mean its extermination in a few years; and bee-keepers might as well make up their minds they will have to pay constantly advancing prices for their sections from now on; and they can afford to. A little figuring will show that comb honey which nets 10 cts. per lb. to the bee-keeper brings him back $10.00 per thousand on his sections. In other words, he can afford to pay $10.00 per 1000 for sections; and if he sold his honey at 10 cts. per lb. he would not lose a cent. But, fortunately, he will not have to pay more than half that price for next year.

The fearful slaughter that is going on in our country at the present time, of our valuable timbers, is a matter for general alarm. Lumbermen are wasting millions of feet by using great thick circular saws when they might just as well use band saws and save all that waste. The government will have to come in and impose on lumbermen regulations of some sort that will stop this fearful waste. In the mean time, young forest-trees ought to be set out; for what will future generations have to depend on for inside house-furnishings and for the every-day needs of life?

THE DESTRUCTION BY FOREST-FIRES.

An article in the July *Review of Reviews* shows that millions of dollars' worth of timber is burned every year. The fires ususally come twice a year—in the spring and in the fall, when the ground is dry. It has been estimated that 65 per cent of the fires are due to sparks from locomotives. The railroad companies are not only careless in providing suitable spark-arresters in the smoke stacks of their engines, but they allow their section men to burn up old ties in such a way that all the property in the vicinity is endangered. Grass takes fire; the leaves in the forest become ignited, with the result that the whole forest is aflame. Yet this thing has been going on

year after year, apparently, with little or no restraint. Various States have laws to protect the forests, but they seem to be weak or else are not enforced. The government of the United States should take a hand in this matter, and see that the railroad companies are put under proper restrictions.

Another cause of forest-fires is the hunters that go roving over the country during the fall. They build campfires, and then these fires, before they are put out, are abandoned, leaving a smouldering mass that is quite liable to set fire to the leaves and rubbish in the vicinity.

I tell you, dear reader, it is high time that the American people were opening their eyes. When Congress convenes, write to your Senator and Representative, urging them to do all they can to protect the forests of our country. Perhaps your efforts will not accomplish much for your *own immediate interests*; but your children and your children's children will need to be protected. The annual destruction by needless and avoidable forest-fires is far greater than the annual cuttings by man. We can't stir up this matter any too soon.

PREVENTION OF SWARMING WHEN EXTRACTED HONEY IS PRODUCED.

BY L. STACHELHAUSEN.

In GLEANINGS for Feb. 15, it is asked how swarming can be prevented if the colony is worked for extracted honey, and whether the forced-swarm method can be used or not. I know a number of plans for this purpose, and which one will be the best depends on the location.

I use very large hives, and they prevent swarming to a great extent, but not under all circumstances. In my locality the bees commence breeding early, and it depends on the condition of the spring at what time the colony will develop to their full strength. As soon as the main honey-flow commences, all danger of swarming is past. This is so in every location if the honey-flow is fast and good, while a slow flow is favorable to swarming. During a poor spring my colonies develop slower, and the queen is increasing egg-laying till the main flow commences; consequently I get no swarms from the large hives, while ten-frame hives may swarm a short time before the honey-flow. During a favorable spring the colonies develop much faster, and sometimes I found that a month or more before the main flow some of the queens laid 4000 eggs daily with a light honey-flow still continuing. Under such circumstances this colony will soon swarm, even if kept in the largest hive. In this case I use artificial increase, and use the plan recommended by Doolittle. Brush or shake colony A on empty combs or foundation on the old stand (for comb honey on starters). The brood-combs without any bees are set on the place of colony B, and this receives a new stand, C. A fertile queen is introduced to B; or if such is not on hand, a ripe queen-cell. Under such circumstances these three colonies will give more surplus honey than two colonies if we had them undivided.

I never extract any unripe honey or any honey from the brood nest, but always give plenty of super room. During a light honey-flow the bees will carry the honey to the supers to make room for the brood. The fast and good honey-flows contract the brood-nest; if not enough, supers are given.

If the colonies are getting of such a strength that swarming is to be expected for some days before the main flow commences, or if the main flow is not so good as to prevent swarming, other plans can be used.

1. If queen-cells are already started we can easily tell when the first cell will be capped; then it is time to manipulate. We remove the hive from the old stand a few steps, and set in its place a hive with empty combs or foundation. From the brood-combs the most of the bees and the queen are brushed or shaken into or in front of this hive with the empty combs. The brood-combs and some of the bees which remain on them are returned into the old hive, and this is set close to the side of the other hive. (It can be set on top or behind it just as well). As this colony will remain weak for some time the first queen, which hatches will destroy the other cells. Now we can unite again. Of course, one of the queens must be removed. If we are willing to remove the virgin queen, it is not necessary to hunt her up. At evening the places of the two colonies are changed. One hour later, when the bees have ceased to fly we change the places again. The old bees, which have entered the hive with the young queen, will kill her during the night in nine cases out of ten. (It is a case of handling hives instead of frames.) The next day this colony is set on top of the forced swarm, a wire cloth between the two, which can be removed six hours later. The whole manipulation is finished in six or seven days.

2. If no queen-cells are started, the first young queen will hatch in ten or twelve days. During this time the colony will get strong, and very probably would send out an after-swarm. Some of the bees will be old enough to do field work, and could work to better advantage in the forced swarm, which is now getting weaker every day. For this reason we remove the colony with the queen-cells in about eight days to

the other side of the swarm, and, if necessary, we brush or shake some of the bees in front of the swarm. As soon as the queen-cells are destroyed we unite again as above.

3. We find the queen of the colony, and set one brood-comb with the adhering bees, but *without* the queen in the hive A, on the old stand; about half of the bees are shaken into this hive. The other brood-combs with the queen are placed in hive B, on the side of hive A. B is hereby weakened so much that the queen-cells are destroyed by the bees in about five or six days. Now we destroy all the queen-cells in hive A, and about half an hour later the two colonies are united as above. This plan takes less time; but the old queen must be found, and a strong swarm on the old stand will do better in honey-gathering than this colony without a queen.

4. A few days ago I received a letter from a bee-keeper in California, in which he gives another plan, which I think is worth experimenting with. With some modifications the plan is as follows: We make a forced swarm as at one and two. On top of this story we set a board with openings closed by double wire screens; the hive with the brood-combs, and enough bees to protect the brood, on top of this. If no ripe queen-cell is on the combs, such a one can be introduced. This hive has its separate alighting-hole. When the young queen is out she will get fertilized over the double screen. Now the two colonies can be united again by removing the board. As they have the same scent this will not be difficult. One of the queens will be killed by the bees. Whether this will always be the old one, as my correspondent hopes, or not, I am not able to tell; but it seems probable to me. This plan can probably be used when comb honey in sections is produced.

In this way the forced-swarm method can be used for extracted honey, and can be done with less trouble than for comb honey, as the old combs can be used. In my locality I do not need such manipulations. Either I get no swarms at all from my large hives, or I increase my colonies some time before the main honey-flow, making three out of two *a la* Doolittle. If more increase is wanted, the following is a good plan in my locality in a favorable spring:

Some colonies are divided into small nuclei, giving a ripe queen-cell to every one. From the other colonies forced swarms are made as above. Eight days later all the bees are shaken and brushed to the swarm from the brood-combs. These contain now capped brood only, and are used for strengthening the nuclei. Of course, the queen-cells on them must be destroyed. With such brood-combs containing capped brood a small nucleus can be raised to a strong colony in about two weeks.

I could give the reasons for all these procedures, but our "practical" bee-keepers and editors do not like "theory," and I have learned that our best men can't understand "theory" from lack of preliminary knowledge, so I had to be very prolix and take much space. For this reason we continue to manage our bees according to "prescriptions," and without knowledge. If the conditions are somewhat different, then prescriptions are "no good." Please do not blame me.

Converse, Texas, March 2.

SMOKERS, AND HOW TO HANDLE THEM.

A Chat with the Editor.

BY S. E. MILLER.

Friend Root:—I call you friend because I have heard of you, and seem to know you, for the last eighteen years; for I often heard your name mentioned by your father long before you took hold of the helm of the ship you are now steering. Therefore when I approach you as a friend I trust you will not interpret any thing I may say to or about you as being intended to give offense or offered in a malicious manner. At the same time, I wish to have a talk with you about smokers, and how to handle them; and in dealing with the subject, I will use plain langnage; and if it seems too harsh, you must consider that I'm from Missouri.

When I take the wrapper from GLEANINGS, about the first thing I do is to run through it and look for illustrations. Well, when I first looked over GLEANINGS for May 15, page 432, I came across an illustration of some one holding a smoker *backward*. I thought, "Who in the world holds a smoker in that awkward manner?" and when I found that it was the editor himself, and read his directions for handling a smoker, I must say I was somewhat surprised. I have been wanting to say something about it ever since, but have put it off from time to time; but when I saw one of Dr. Miller's *last* Straws, p. 476, June 1, and the editor's reply, I could no longer resist the temptation of going to the assistance of the other Miller.

Now, Ernest, is it not possible that, when you first commenced using a smoker, you acquired the habit of using it hind side foremost, and have become so accustomed to so using it that you have come to believe it is the proper way? Your reply to Dr. Miller's Straw, about the axis of the arm, etc., may look all right on paper, but it will not do in practice. Your way of using the smoker throws nearly all of the force required to work the bellows on the thumb alone, and in every way it seems to me the most awkward way that one can grasp a smoker. Here is the way I use a Jumbo; and I believe that, if you will call for a vote on it, you will find a great majority of practical bee-keepers use it in practically the same manner. As the nozzle points from you, grasp it with the right hand, the thumb resting on the upper right-hand cor-

ner on the side next to you, and the four fingers on the opposite side of the same corner next to the fire-box. When a few light puffs only are needed, use it in this manner; but when you have heavy work to do, let the ball or inside of the hand take the place of the thumb, and work it for all it is worth.

Sometimes when I get in a hurry to raise steam (smoke) I grasp it in this manner with both hands, and make it snort like a steamboat. Then, again, a good sportsman should be able to use his gun either right handed or left handed. Would not the bee-keeper be able to grab up a smoker in either hand, and grasp it in the quickest possible manner—any old way, so to speak, and make it do good execution? On page 432 you say, "Stand in front of the hive with the entrance to the left." Now, what I consider the front of a hive is the end or side that the entrance is on. Had you said, stand at the side of the hive with the entrance to the left, and the smoker in the right hand, you would have described the position exactly, only I sometimes change the smoker to the left hand while I use the chisel or hive-opener with the right.

Held in the position that I have described, you have full sweep of the entire hive without in the least cramping the hand or wrist. When I set it down I usually put it where most convenient; but if the bees are inclined to be cross I place it where the smoke will blow over the top of the frames; otherwise I place it where the smoke will blow away from the hive.

About that hook, I think the fellow who wants it on his smoker ought to have to mention it when he orders it. I hooked it into my hands several times, and thought bad things about it, and threatened to take it off; but the first time a brother of mine got hold of it and hooked it into his hand a time or two he took the screwdriver and saved me the trouble. I put it on when I first got it, because I thought it belonged there; but I soon found out that it did not.

This is already longer than I had intended, but I have a few remarks to make about smokers as well as how to use them. When I first read the description of the Jumbo Corneil I decided that I must have one, for the great fault with most of the smokers on the market is that they are not large enough. The Jumbo gives a good strong blast. It does not suck smoke back into the bellows, and get all gummed up with that bane to smokers for which I know no name —an accumulation of semi-liquid soot, or condensed smoke. It is easily started, and no trouble to replenish. After you have it well started, almost any kind of fuel can be used. One can cram in a chunk about as big as his fist, or he can break up small limbs or any thing in the shape of wood that he happens to get hold of. It does not have to be made into such small pieces as are required for the smaller-sized smokers.

While speaking of fuel I will mention that I have never found any thing better than, even if equal to, partially decayed elm wood. This is prepared in suitable-sized pieces, and, thoroughly dried, it burns readily, yet not too fast, and gives vast quantities of smoke that I consider just right. It is not pungent as is the smoke from most other kinds of wood, yet it is very dense, and sufficiently strong for almost any vicious colony.

To those who have had but little experience with smokers, I will say, do not close the smoker too soon after lighting. Allow it to burn a few minutes, with the top or cover thrown back until it gets a good start. In lighting the smoker I usually whittle a few fine shavings unless I happen to find suitable kindling about the saw-table. After lighting the shavings I use coarser stuff, and finally put in the pieces of elm three to four inches long, and from three-fourths to two inches square, or about that size.

I have no doubt that Doolittle's plan of gathering up a few coals where the smoker has been emptied before, applying a few drops of kerosene, and then a match, after which the fuel can be filled in, is the quickest and best way of lighting a smoker. I have used this method in starting the cook-stove fire for a long time, and it saves time and trouble. But, to return to Jumbo. I have one fault to find with it, and that is a serious one. That hinged nozzle works all right as long as the smoker is not used; but as soon as it gets gummed up, the top refuses to go down; and a smoker that will not keep its mouth shut is an aggravation; for, instead of the smoke going out at the nozzle, as it should, it comes puffing out all around. I think you could improve on this by making the top flaring so that it would fit down over the stove, something as a funnel would fit over a cup of a little smaller size. I took the top off mine, and with a hammer, and a solid piece of iron to lay it on, I flared it about half way around, leaving that part where the hinge is attached remaining as it was, and I find it quite an improvement. Probably in some climates this sooty accumulation is not so bad, as I have noticed that it seems to be worse in damp weather; but there is always enough of it to make trouble. I think that, if the Jumbo could be made a cold as well as hot blast smoker it would be a great improvement. This might be done by having another tube near the top, and a slide so arranged that, when one tube is open, the other would be closed, though it might not work as well in practice as it does in my mind. I only suggest it.

I think the improvement on the Vesuvius, as suggested by Geo. E. Rozelle, page 594, July 1, will be all right. How would it do to have a hole in the inside cylinder, corresponding with the one in the outside, and have them make a continuous opening when you wish to use it as a hot blast? Then if you wish to convert it into a cold blast, give the inside cylinder about a quarter or half turn, and allow the blast to pass up between the two cylinders.

[You may be a little surprised, but I indorse nearly every thing you have said. When I gave directions for handling the smoker, I meant it to apply to those who desire to use it for one or two light whiffs to bring a colony into subjection; for the average colony requires but very little smoke. I agree with you, when you desire to make a large amount of it, grabbing the smoker in the way you recommend is perfectly proper and right; but why use the strength of a Hercules to smoke the average colony? If you sit down on the hive-cover it is perfectly natural and easy to have the thumb next to the fire-cup and the fingers on the outside of the bellows, for then the smoker will adjust itself automatically to any position, standing or sitting.

When I spoke about the "front" of the hive, I meant the working side. Perhaps the language was a little unfortunate, but I think most of our readers will understand what I meant.

I quite agree with you that partially decayed elm wood is most excellent, and I have come to prefer it to planer-shavings or excelsior, such as we have used so much in years past. The excelsior does very nicely for lighting the smoker, but it burns out a little too readily. Hard wood is very good, but it burns too slowly, and does not yield enough smoke without too much herculean effort, such as you recommend.

Whoever made the suggestion of using partly burned fuel for restarting a smoker shows he has had experience in the handling and lighting of these implements. I have always noted that partly burned wood will ignite much more readily than fresh stock; but I do not know why I never thought to recommend it with the instructions that go with our smokers.

As to whether we should make the Jumbo smoker both hot and cold blast, you will remember we some little time ago, illustrated an improvement by Mr. George W Brodbeck, which virtually makes a cold-blast smoker out of the standard Jumbo Corneil. Such a smoker can be converted any time into a hot or cold blast by removing or inserting an inner blast-chamber.

I have tried the suggestion of Mr. Rozelle, as given on page 594, but it does not seem to work as well in practice as in theory. To make the Vesuvius both hot and cold blast as you suggest would lead to a little complication. The Brodbeck idea would be simpler and more practicable.

Never hesitate to "wade into" the editor. If I give the impression at any time that I am looking for honeyed words, and for an indorsement of my opinions on every question, I wish to have that impression corrected at once. When GLEANINGS gets to the state where only the views of the editor will be tolerated, it will be a sorry one-sided affair. Our contributors are requested, yes, *urged*, to speak freely what they think. If there is any thing in the Root Co.'s supplies that is not what it should be, be free to criticise. Real criticism of the right sort does more to perfect supplies than praise. Oh, yes! I should have said that the difficulty with the hinge of the Jumbo smoker is due to the fact that one leg of the hinge is a little too long. In the 1904 patterns this will be overcome. It is not a collection of creosote, as you suppose, but it is a question of the adjustment of parts.—ED.]

CAUSE OF BEE-PARALYSIS.

BY E. J. ATCHLEY.

As promised some time ago, I will give the real cause of bee-paralysis. Having been troubled more or less with this disease for about 30 years, and having read every thing that came my way concerning it, and tried every known remedy without success, I set out about five years ago to learn first the true cause, and then get the help of the masses in curing it, if really we need a cure. By close observation, along with my almost every-day work with the bees, I have found out the true cause of paralysis, which is as follows:

It is caused by bees preparing themselves to feed larvæ, and no larvæ to feed, or not enough on which to bestow the amount of chyle, or prepared food, and the nurse-bees will not throw out or deposit this chyle, and soon the mixture of pollen and honey begins to ferment, or make the nurses sick; and it is owing to how much chyle they have prepared as to how bad the bees will be affected. This discovery was made by closely watching the bees that happened to become stimulated out of season, or at times when queens were not laying, such as moving bees in winter, or disturbing them in any way at such times as they ought to be quiet. What puzzled me most was that the Cyprian and Holy Land bees did not take paralysis at all, or very seldom at least, and these bees are such great breeders that the queens begin laying at the least excitement, in season or out of season, and furnish plenty of larvæ on which the bees can use the prepared food, and consequently they are always healthy. Make a colony of Holy Land or Cyprian bees queenless, and they take laying workers in less than 24 hours, or before the nurse-bees begin to suffer with a supply of prepared food.

I have had hundreds of nuclei take paralysis when Italian bees were used, at times when there was an abundance of pollen coming in, and honey sufficient to stimulate brooding, and the Italian bees are not such great brooders, or so quick to take laying workers; hence the bees are diseased, because they have no place to use the chyle, and soon swell up and die.

It is very evident that it is bees that desire brood, and which would be great nurses, that take paralysis worst; but the laying faculties, queens or workers, as the case may be, fail to supply the brood, and colonies are affected just to the extent of prepared food not used, and this is why

there is so much difference, and so many stages of this malady.

Changing queens has been recommended a great many times, and in many cases it proved effectual, inasmuch as the new queen would soon supply a different working force, and the new queen perchance a better layer, and furnished more larvæ to be fed. But in cases when the new queen was no better than the one taken out, the matter was not remedied, and paralysis kept on. If there are enough of the old bees left to start up a colony which have not been poisoned by the chyle, when new honey and pollen come in, then the queen is stimulated to a greater degree, and plenty of larvæ are furnished to take up the food prepared by the nurses, and paralysis stops at once. Bees in cellars sometimes get excited from different causes, and the bees at once begin preparing chyle, but the excitement does not last long enough for the queen to begin to lay, and disease begins, and sometimes nearly ruins the colony before brood-rearing begins. I have seen hundreds of Italian nuclei, which were queenless and broodless, make queen-cell stubs all over the pollen portions of their combs, and nearly all the bees swelled up with nurse food, and all soon die, because they had no place to use the food. Salt has been used as a remedy, but I know that it is not worth any thing, as paralysis is not really a disease, but only a condition brought on by each individual colony, more or less, according to their several characteristics, or breeding propensities, out of season. I think that if bees could be placed in cellars without pollen, absolutely, there would never be a single trace of paralysis, no difference how much excitement they received. There is no such thing as paralysis being a catching disease, as there is nothing to catch, and a colony affected can be placed over a healthy one; and where there is brooding going on, and all is well, no more sickness or death from full and bloated stomachs will result.

In 1880 I suggested to A. I. Root that I thought that pollen was the cause of what we then called the nameless bee-disease, and I came pretty close to it, but did not go far enough; as, certainly, if there was no pollen there would be no paralysis. Beekeepers all over the land have just about used all the remedies, to my notion, and this, too, without knowing the cause; and that is, changing queens, placing sick colonies over well ones, etc. After once knowing the true cause, some practical apiarists over the land may be able to figure out a complete remedy. If paralysis were a disease, then the queens and drones would have it too, as they all sleep in the same room, eat at the same table, sip out of the same cup, as it were; but nothing except the workers are affected; and as drones and queens are bees, and it being mature bees that get sick, certainly all would be subject to the same affection; but there is no disease, and no danger of one colony catching it from another. If I had a few foul-broody colonies on which to experiment, and could get a place where there would be no danger of its getting spread to other bees, I would be glad to try my hand in ferreting out its cause also; but as foul brood does not originate in this country, and as there is no condition known under which foul brood could start in this region, I think it would be quite difficult to get at the cause unless one were where its origin is.

Beeville, Tex.

PHACELIA—HOW IT LOOKS.

BY E. F. ZAHLER.

I see several inquiries about phacelia. As I have a nice collection of flowers, also a book, "Wild Flowers of California," I will write you a few lines.

Wild heliotrope, vervenia.—Phacelia tanacetifolia, Benth. Baby-eyes, or waterleaf family.

Stems.—One to three feet high; rough and hairy. *Leaves.*—Much divided. *Flowers.*—Bright violet to blue; in clustered, scorpioid racemes. *Calyx-lobes.*—Linear or linear-spatulate. *Corolla.*—Six lines long; style, two-cleft. *Habit.*—Throughout the western part of the State.

The wild heliotrope is one of the most abundant flowers of mid-spring, especially in the South. It affects the gravelly bank of streams or the sandy soil of mesas, or grows all along the railroad embankments, making great mounds of foliage, thickly sown with the bright violet-blue blossoms; or it may very often be seen clambering up through small shrubs, seeming to seek the support of their stiff branches. It is needless to say that this is not a true heliotrope, but belongs to the closely allied genus *Phacelia*. The specific name, "tanacetifolia," meaning "with tansy-like leaves," is more applicable to the variety *tenuifolia*, Thurber. Among the Spanish Californians it is known as *vervenia*. It is a very important honey-plant.

P. Douglasii, Torr., is a species with lavender corolla, with much the aspect of the baby blue-eyes. This is common in the western part of the State, south of Monterey, and is found sparingly north of that point. There is also—

1. *Large-flowered phacelia*, *P. grandiflora*. This is the largest-flowered of all the phacelia. *Habit.*—From Santa Barbara to San Diego.

2. Another, which resembles the above, is *Phacelia viscida*, wild Canterbury bell.

3. *Phacelia whitlavia*, Gray. *Habit.*—Los Angeles to San Bernardino. It is one of the most charming flowers to be found anywhere.

Another, which also resembles closely the above, is the *Phacelia Parryi*, Torr.

If you wish, from the last four known, more particulars about leaves, flowers, etc., please let me know, as I am only too glad to answer the same.

Napa, Cal., Feb. 1, 1903.

KEEPING BEES UNDER SHEDS IN ARKANSAS.

Advantages of Shedded Apiaries.

BY I. S. ALEXANDER.

When I came here the old shed was here, and it held 40 stands by crowding; when I got it full I put a platform down for the stands as I would for a shed, but no roofing over it; no matter how good they were, I never got more than one super from them. But right in the shed, not ten feet away, I could get 5 to 6 supers and sometimes a super of extracting-frames.

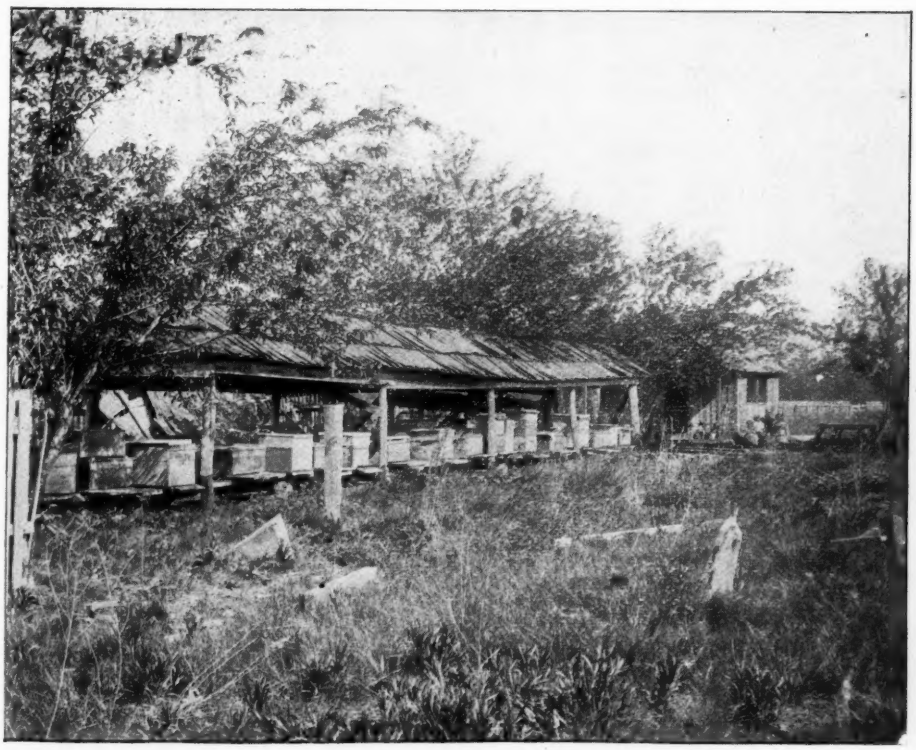
The new shed is about 30 feet in front of the old one. You can't see the workshop, which I wanted to show. The sheds run north and south, and the first (or front) shed was taken from the northeast corner. Our neighbor was working here. He was at my right. The two little girls were at my left, with the dog. The way he was standing was a mistake.

Waldenburg, Ark., July 6.

[In some localities where the sun is hot it is well to have the bees under sheds. In Arizona, California, and in some parts of Texas and in portions of the middle Southern States, and in Cuba, shedded apiaries are used. In the first-mentioned State the sheds are made to run from east to west, so that, as the sun ri·es, the bees will be constantly in the shade. But I notice that our correspondent says his sheds are arranged from *north* to *south*. In his locality there may be an advantage in that arrangement, because the bees get the full effect of the morning sun by 9 o'clock, and retain it till about 3 in the afternoon. But in hotter climates, it is certainly much better to have them run east and west. There is one advantage in keeping bees under a shed—they are more quiet to handle. A bee will seldom volunteer an attack inside of an inclosure. All know how mad bees will follow one up to a doorway, and stop as soon as the pursued has passed inside.

A. I. Root, when he visited Cuba, noted the fact that the bees were much more quiet under these sheds, and the cut of the Cuban apiary here reproduced will make the reason of this plain. The bees have no occasion for flying inside of the sheds; and the low projecting eves of the roof shut off to a great extent their view of any one inside; and if they do not see him, of course they will not volunteer an attack.

I can not quite understand, however, why our correspondent gets so much more honey under the sheds than outside, unless the intense heat of the sun causes the bees to boil out of the hives and supers during the heat of the day, making them get into the habit of loafing rather than build comb and store honey.—ED.]



ALEXANDER'S BEE-SHED.

THE PROFESSIONAL BEE-KEEPER.

Brood Next to Top-Bars; Chunk Honey.

BY FR. GREINER.

The filbert-bush has of late been mentioned as a honey-plant; in fact, it has been recommended as such in the German bee-periodicals for many years. Dr. Dzierzon has often made much ado over it. It is entirely worthless for bee-forage. I have many large bushes on my farm, some in the bee-yard, but I have never seen a single bee work on the catkins, or the female blossoms, which latter are most inconspicuous. At this writing, March 19, the catkins are full of dust (pollen); and when jarring the bush the pollen will sift out. I fail to understand why the bees are not seen on the filbert when they are frequently found on the tag alder or swamp alder (*Alnus rubra*), the nature of which is similar to the filbert. For bee-forage I would class the alder away ahead of the filbert, but not as good as willow. In other localities the filbert may be visited by bees, but not here. In Germany the woods are full of filbert-bushes. Well do I remember the fun we boys had gathering the nuts, filling all our pockets, etc. They were a treat and a luxury to us. Here we pay 20 cents a pound for them. Why not grow a few? They will do well in shady places.

As to bees forming a circle around their queen, I want to add that, of course, this is not always the case. At times the queen is treated seemingly very disrespectfully—pushed about and run over; but quite frequently the bees behave in such a manner toward her.

Say, Mr. Editor, did anybody inform you before that the *professional bee-keeper* has been called a "humbug" by some disgruntled friend in a certain small farm paper? I can not understand his motive. He continues thus: "Most of the would-be professionals get their living off their farms or in some other way." I wonder if it can not be possible that the gentleman is a little off. I know of some professionals who have not only paid for their homes from the proceeds of their bees, but have been enabled to put out orchards, drain their lands, and make many other improvements. Perhaps the gentleman is of the opinion that a bee-keeper is not a professional bee-keeper unless he lives on a little city lot and in a rented hut. I want to inform him that there are many professionals who live on large and small farms, raise their own fruits and vegetables, and even alfalfa and alsike or

ALEXANDER'S SHEDDED APIARY.—SEE PRECEDING PAGE.

crimson clover. Some even go far enough to sow buckwheat and catnip. That belongs to the business, and makes the man all the more a professional.

It has been intimated that the reason why the bees in Medina did not put brood into the L. frames clear to the top-bar was the elongation of the cells next to the top-bar. What I want to know is, does the foundation you use in horizontally wired frames sag any, so that the cells are elongated? If it does there must be something wrong with the wiring. I have often seen combs, built on narrow starters, sag enough along the upper part of the frame so that drone brood was raised therein.

Were you aware, Mr. Root, that these Texans make a big blow about their producing chunk comb honey? If you don't silence them the predictions are you won't sell many sections in the near future. You know I begin to be very favorably impressed with the idea, and have already decided to flood my town with the article next fall. I have formerly sold all my unfinished honey as chunk honey in tin pans and buckets, at a reduced price, and always found willing buyers. It might be expected that the regular Texas style of chunk honey, with extracted honey poured over it, will take readily also; just think how many basswood-trees might be saved for better use, producing nectar, if they were not needed for section-making.

Absorbents, says GLEANINGS, do not give as good results in Medina as sealed covers. The same seems to be true with our bees near Niagara Falls. Locality makes all the difference. In Ontario Co., absorbents give me best results every time.

Naples, N. Y. F. GREINER.

[This year our bees ran their brood more up to the top-bars than I ever saw them do before. The peculiarity of the season seems to be responsible largely for this. It is not true that the cells next to the top-bars are elongated because of the stretching of the foundation. When there is stretching there is carelessness in wiring. Of course, if the foundation is too thin it will stretch on good wiring.

The scarcity of lumber for making sections may force the bee-keepers into chunk honey more and more as time goes on. But chunk honey must be sold locally among neighbors and friends, or near-by markets. It would hardly "pass muster" in distant markets until those markets have been educated to receive honey of that kind. Consumers have been fooled a good many times into buying chunk honey, getting instead broken pieces of comb and pure glucose. When they get a dose of this kind tiey will not buy again. Chunk honey is open to the objection, like extracted, that it can be adulterated or glucosed, while comb honey in sections is always pure bee honey. Of course glucose can be fed back to fill out comb honey; but it is a slow, expensive job, and will not pay in the end, and the practice will never be carried out.—ED.]

SHED APIARY OF C. H. FLANARY, DRYDEN, VA.—SEE PAGE 725.

MIGRATORY BEE-KEEPING.

I want to ask a few questions on migratory bee-keeping. I live close to the Kentucky River. It is locked and dammed, and gives perfect water for boating. One month ago, if I could have moved my bees 50 miles up this river it would have been worth 50 lbs. per colony of honey from clover, aside from the basswood and sourwood. My average here this year has been 60 lbs. per colony, spring count. My brother's average in Richmond, 17 miles east, is over 100 lbs. During the last days of May and first days of June he had three inches of rain, which made his flow good; while from the first of May until the 5th of July my rain was less than one inch.

I wish to avoid this by building a boat so I can move up or down the river, as it suits the season. I should also like to prolong the season by going south in the early spring and working north as the season advances. I intend working the Tennessee River as far south as Chattanooga, Tenn. Around Lookout Mountain and the National Park is a good place for bees—plenty of clover, basswood, and poplar; and the honey-flow begins there a month earlier than it does here, while yours is one month later.

Now for the questions:

1. What time does your honey-flow begin?
2. What time does the basswood flow begin in Wisconsin?
3. Could it be reached along the Mississippi or Wisconsin Rivers?
4. Do you believe it will pay me?

This is the main question, and the one I am banking on.

I do not intend to work the bees from the boat. I aim to move, and set them out on the bank. I intend to make a wire-cloth hood to place on top of each colony to keep them from smothering. The material to build the boat will cost $700. I have 16,000 miles of water before me to gather honey on. I have 100 colonies of bees, all in Rootville hives. I would aim to work 200 colonies, not all from the same place, as this would be crowding them. I would have my brother as a partner.

I see in GLEANINGS that you are riding an auto. Come down and see me this fall, and I will show you some roads that you can speed it on—2000 miles of macadamized roads right around me; also some good bee country that is never mentioned. I doubt whether it has an equal in the United States. I will give you an idea. Beginning 13 years ago, 1890, 300 lbs. per colony; 1891, 50 lbs.; 1892, 25 lbs.; 1893, 40 lbs.; 1894, nothing; 1895, 25 lbs.; 1896, 10 lbs.; 1897, 250 lbs.; 1898, 150 lbs.; 1899, 300 lbs.;

SHED APIARY IN CUBA. SEE PAGE 719.—*From Munson Line Bulletin.*

1900, 40 lbs.; 1901, nothing; 1902, 110 lbs.; 1903, 60 lbs.; spring good, prospects for fall flow, as we had an inch of rain the 5th. Ring up Uvalde, Texas. This makes 1370 lbs. per colony for 13 years, all extracted, as section honey is foolishness, I think. I never let my bees be idle a minute. As soon as the super is well filled it is taken off and ripened artificially, if it needs ripening; and it needs ripening unless it weighs 12 lbs. to the gallon.

VIRGIL WEAVER.

Buckeye, Ky., July 13.

[I am not able to give you much definite information on this subject. The experiment was tried once by putting bees on a raft, by C. O. Perrine, something over 20 years ago; but it did not prove to be a success. Too many bees were lost on the water. The expense of moving was considerable, and the whole plan was abandoned as a failure. But your plan differs a little in having a boat to accommodate the bees; and if you landed them every time you made a stop you would do away with the losses on the water, probably. It *seems*, at first thought, as if the plan ought to work. If you can build a boat at the price you mention, and in such a way that it can be converted to other uses in case it is a failure for the purpose you design it, so that you would not lose the price of the boat, it might be well to try the experiment. But you would have to pay a tug for towing you from one point to another.

But a better and perhaps a cheaper plan would be a gasoline-launch engine with propeller to drive you from point to point. Perhaps that was contemplated in your estimate of $700.

The one difficulty (and I think the chief one) with the plan is that the season advances so rapidly that it is questionable whether you could move fast enough to keep up. White clover opens up with us somewhere about the middle or last of June, and usually lasts two weeks, and sometimes a month. Basswood usually comes on before clover ceases. But about the first of July our season is often entirely closed. If we could move the bees by express (a boat would be too slow) to Northern Michigan we might be able to catch the later honey-flow. My own personal opinion is, the season would come on more rapidly than you could move your boat. You probably could not go much more than three or four miles an hour unless you had a tug to haul you, and that would be expensive. In order to catch the flow as it opened up from point to point northward, you ought to have the wings of the wind. An express train would not be any too fast. A failure of the whole scheme, if it came at all, would be because of your inability to move fast enough when you desired to change your bee-range. A difference of 50 miles would be hardly perceptible. You would probably have to go 300 or 400. If your bees were doing well at one range you could hardly afford to move them until they had pretty well finished up, so you might have to spend a week or ten days in any locality before the season would be over there; and by the time you could get up to your new range the flow would be too nearly gone.

HOW STRAY RUNAWAY SWARMS ARE CAUGHT, BAGGED, AND BROUGHT HOME ON A BICYCLE AT THE HOME OF THE HONEY-BEES. SEE EDITORIALS.

If any of our readers can offer us any advice in this matter we should be glad to hear from them. I can only say this: I should like to have our correspondent try the experiment; but we do not wish him to sink money for the edification of the rest of us.—ED.]

RED-CLOVER BEES.

Adjoining my apiary here is considerable of the large red clover, and I notice quite a few bees gathering nectar from it. I do not know what colonies the bees are from, as I have about 50 at my home apiary among which are two queens (red-clover) which you sent me, and I am somewhat inclined to think these are the ones sending out the workers referred to.

The question is, does your red-clover stock work freely on the large clover? I have five or six different strains together, and wish to locate the proper colonies.

Akron, O. A. J. HALTER.

[Our long-tongued bees of red-clover strain work better on red clover than the average red-clover Italians; but all Italians work on red clover to some extent; but no bee works on this plant as well as it does on white clover or alsike having shorter tubes. Our red-clover strain will gather considerable honey from red clover, but nothing like the amount they will take from white clover of equal area. We desire to make a frank clear statement, so that you will not be deceived as to what the bees actually do.—ED.]

STORES FOR WINTER; WINTER-COVERS, ETC.

Will a colony want the whole of the stores they make in the bottom chamber of their hive, said hive having eight frames perfectly full? or would you remove the two end ones? What material is best to make covers for top of brood-chamber for winter protection? Will it pay to winter a third swarm on a box hive, hived the last of June?

C. KERSHAW.

Forest, Ont., July 19.

[As a general rule it is not advisable to take stores from the brood-nest. A good deal will depend on the locality, and on whether you expect a fall flow after the main flow of the summer. But if you are not sure of any honey coming in after the main crop, better leave the brood-nest untouched. Indeed, it may be advisable for you to feed them. For a roof you can use paper, cloth, or a tarred felting; the cover, of ordinary boards. If no special covering

A. I. AND HUBER ROOT READY TO START FROM MEDINA, OHIO, ON THAT THOUSAND-MILE TRIP AMONG BEE-KEEPERS OF OHIO AND MICHIGAN.—SEE EDITORIALS.

is used, there is no better material than pine, properly tongued and grooved, to shed water.

A third swarm in a box hive will winter well enough if stimulated by feeding; but we would advise putting it in the cellar, or, better still, transfer it to a movable-frame hive. Then you can see what condition it is in.—ED.]

A NEAT LITTLE SHED APIARY; A. I. ROOT'S HOME TALKS.

In my bee-shed, taken June 27, 1903, myself and Mr. Grover are sitting on a hive. I sit on the floor at the shed. I have a fine place to keep my bees—dry and grassy. It drains off in a few minutes when it rains. Our bees are doing well, and we have had a fine season so far. If the season lasts we shall get a good crop of honey, mostly from white clover. Of course, we have a variety of honey-producing plants, such as some basswood, locust, sourwood, and poplar.

I delight in A. I. Root's departments. I should like to hear him give us a little lecture on the scriptures. We need more such men as Mr. Root to stand up and talk for the Master; and we should be thankful for Mr. Root's talks along this line.

Dryden, Va. C. H. FLANARY.

A ROBBER-FLY THAT IS NOT WHOLLY AN ENEMY.

I have sent you a specimen of some kind of insect which is a bee-catcher. They do not seem very numerous. The first one I saw had a drone, and was on a willow-leaf on the branch, making his meal on the drone. To-day I caught this one alive. They are so wonderfully strong, and especially so in the legs, that they catch a bee by alighting on its back, clasping it in its grasp, and by its long stout legs it stretches the bee's stinging part right out, and then pushes its hard bill right down into the bee's body, in that hard place between its wings. The worker it had to-day was heavily loaded with bee-bread on its legs. It seems they catch the bees when coming in loaded. F. P. COOK.

Maud, W. Va., June 5, 1903.

[Prof. Benton, to whom these specimens were sent, replies:]

Mr. Root:—I return herewith a letter received from you some days ago, which awaited the arrival of specimens and their determination. The robber-flies which were found by Mr. Frank P. Cook, catching his bees, are known as *Dasyllis sacrator*. They belong to a numerous group of predaceous flies; and although they may frequently attack honey-bees they also get a good many injurious insects, so that they may be accounted not wholly a pest themselves. It does not seem practicable to destroy them or prevent their ravages wholly, the only way being to frighten them when they are noticed about the apiary; but they will be sure to come back another day after more bees. The losses on this score are not very great. It is also impossible to get at their breeding-places, which are probably in the ground about the roots of decaying vegetation. FRANK BENTON.

Washington, D. C., July 25, 1903.

RED-CLOVER BEES OF THE MOORE STRAIN.

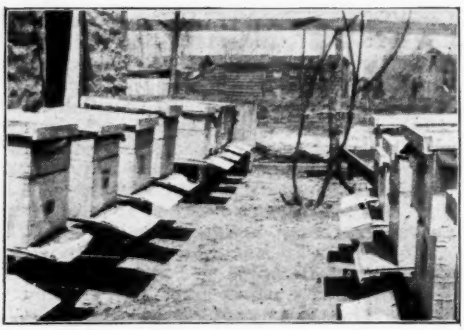
I saw my bees getting honey out of red clover, and they did not pick out the small blossoms, but worked them as they came to them. The time I noticed them on red clover was when there was plenty of white clover in bloom. When they could not reach the honey easily they would shove their heads down into the little blossoms, and then stay there until I was confident they got at least a good part of the honey. My bees haven't only long tongues, but they have a determination back of their tongues to get the honey. W. T. DAVISON.

Velpen, Ind., July 26, 1903.

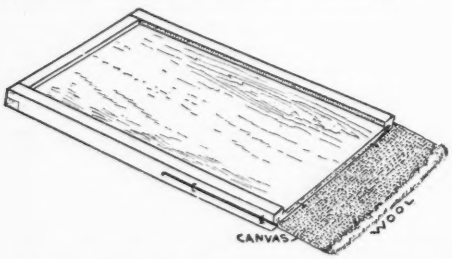
QUEEN-CELLS REARED FROM WOODEN CELL CUPS.—SEE EDITORIALS.

A CANVAS ALIGHTING-BOARD; STARTERS VS. FULL SHEETS IN NEW MEXICO.

I take the liberty of sending you a picture of a part of my apiary, and a diagram of my new adjustable alighting-board (or canvas). This board is made of staples, wire, and some good strong cotton cloth, leaving at one end a hem through which to



run the wire. This wire is loosely fastened to either side of the bottom-board with small staples, one at the front and the other about 7 inches from the front. The edge of the canvas is tacked to a strip of wood ⅜×1, which is tacked to the lower side of the bottom board just under the entrance.



The wire should be No. 8 galvanized, because the common wire would rust the canvas. This can be bent down at any angle desired to suit the fancy, and it can be attached to any short alighting-board to extend it any distance desired. For a party who must move his bees it can not be beaten, as they can be slid back against the alighting-board out of the way; and after the hive is placed on the stand, all one has to do is to pass along the front of the hives and pull them out.

The average canvas is almost too heavy. I use a good heavy cotton cloth, and it would be a good plan to have different cottons where the hives are close, to keep from such a heavy loss of queens.

I should like to see how Mr. F. P. Clare (p. 386) and Mr. Strangway would succeed with their starters in the brood-nest. I believe they would be thoroughly disgusted in this locality, and wish they had never seen starters. It matters not what season of the year, nor under what conditions, it seems to be a craze with the bees to build a third or a half drone comb, and I am sure I have followed the writings of some of the best bee-men who write for GLEANINGS; but starters will not work. It is the greatest source of trouble to me, so I use full sheets of foundation, and wire it well, and keep the hive well protected from the sun's rays, and have no trouble from sagging foundation. I wonder if Mr. Strangway knows that the raising of several pounds of drone brood consumes a great deal of the nurse bees' time, and also considerable honey. I prefer the full sheets of medium brood in the brood-nest, and get the queen to laying to her full capacity in three or four days, and get them ready for business, as it is honey I want; and if they dally along building comb, you are losing honey, which will pay for the extra cost, or the few cents which the full sheets of foundation cost. I use starters for the section boxes of the lightest super foundation that I can get. I did use full sheets; but it is too thick, and it makes a tough center-piece, which I do not like. Of course, it takes a little more time, but makes nicer honey to eat. If I could get a thinner sheet that they would not tear down I would do so. H. E. JAYNES.

San Marcial, N. M., June 1.

[The canvas or muslin alighting-board, such as you outline and describe, seems to be quite a good thing; but its life would probably be only a couple of years unless it were treated with linseed oil. There is one thing you have not mentioned in connection with this device. It can be shoved up out of the way of the lawn-mower in cutting down grass.—ED.]

CRACKED FOUR RIBS, AND HURT INTERNALLY BY A FALL WHILE GETTING A SWARM FROM A TREE.

I had the misfortune to fall from a tree while hiving a swarm of bees, and crack four ribs, and was hurt internally, but am so as to be about again. I never saw so much swarming in my life. Bees are gathering lots of honey up to date; have second super on some colonies. Clover is still in bloom, and basswood just commenced to blossom—that is, in the town of Bennington, where I live; but in some places they say they are not doing so well.

IRA C. MATTESON.

Cowesville, N. Y., July 14.

THE QUEEN'S PREFERENCE FOR NEW COMBS.

Mr. A. Heinkel is mistaken in thinking that those old combs mentioned on page 443 were all solid pollen. I do not think they were more than three-fourths full, if as much, pollen and honey. The rest of the cells were quite empty, but the queen filled every available cell in the newly drawn comb before she paid any attention to old combs.

REGINALD C. HOLLE.

Alma, Brown's Town, Jamaica, B. W. I.

COLONY MANIPULATION — QUESTIONS CONCERNING.

If the brood-chamber and contents of a colony be placed over a bee-escape board on a hive (on same stand) containing frames or combs, would the bees going down, and making this lower hive a storehouse for honey, etc., be likely to produce fertile workers? and for how many weeks do you think the upper brood-chamber with the queen would continue to produce young bees, provided they had plenty of honey, the escape proper being covered with excluding metal to restrain the queen? Do you think that wire cloth, instead of the board, would make the escaping bees less likely to raise fertile workers? Would the presence of a caged queen in a broodless colony prevent production of fertile workers?

Is it advisable to use a covering between the hive or super and the cover proper of the Danzenbaker hive? and if so, of what material and under what conditions?

Should the super be used in connection with the hive for wintering? What are the advantages and the disadvantages?

Would a common drygoods box of inch stuff fitting down over a hive, with sufficient space all round for the introduction of chaff, straw, or other non-conducting material between, prove a good and sufficient winter protection for bees?

My hives now face north because the prevailing severe summer winds are from the south and southwest, and the bees can better effect their exit and entrance in the lee of the hive. Should the hives be faced south for wintering? J. ALBERT SMITH.

Lincoln, Kansas, July 18.

[But why put a colony above the escape-board? I can see no possible advantage in such a procedure. Whether fertile workers will be started will depend somewhat on what kind of bees are used. If they are Eastern races, such as the Holy Lands or Cyprians, fertile workers might be developed below. If they are Italians, the probabilities are that the bees would dwindle down into a discouraged condition. The presence of the wire cloth in place of the board would not make very much difference with the result either way.

When a queen is caged in a hive, the colony is to all intents and purposes queenless, and the bees behave just as if she were not in the hive at all.

I would not advise using a super filled with sections in connection with the hive for wintering. If the sections be removed, and packing-material be poured in the super on top of the frames, the results may be very beneficial. In climates where the winters are not too severe, a super filled with packing-material is indeed a very great help.

A drygoods-box as a winter-case will give excellent results providing the roof or top is tight enough to shed water. If it is not, wet packing-material is worse than nothing.—ED.]

BIRDS AND BEE-STINGS.

In GLEANINGS for Oct. 1, 1896, page 715, is an article of mine dealing with the above subject; and as your footnote thereto is very brief, and no comment has since been made upon my statements, I am afraid they have been received with the proverbial "grain of salt." I may say that, on several occasions since then, I have made post-mortem examinations on these birds, with corroborative results; and now a bee-keeper residing about 25 miles from here reports an experience even more incredible than mine. I am inclosing his letter for your perusal, which kindly read in connection with mine mentioned above. I am also sending in one of your mailing-blocks portions of two stomachs taken from these birds, showing scores of stings imbedded in them. Just imagine 97 stings, with their accompanying poison, piercing the alimentary canal of one bird, and that bird apparently suffering no inconvenience therefrom! The scientific name of this bird is *Oriolus viridis*, and, fortunately for us, they are not at all numerous.

H. L. JONES.

Goodna, Australia, April 11, 1903.

[The stomachs sent were filled with stings. No one has or could question the evidence, for we have had from time to time other corroborative proofs. Here is the letter referred to above.—ED.]

Dear Sir:—With reference to the green orioles as bee-eaters, I am forwarding you two gizzards out of three, taken from two green orioles that I shot to-day. The third one had 16 stings in it. I thought it was not worth sending as compared with the two. I am very much obliged for the information that these birds eat bees. They are naturally fruit-eaters. I think it might be worth our while to make it as widely known as possible to bee-keepers.

These gizzards, when taken out of the birds, were of a bright yellow color, so that the stings were very plain to be seen. I counted 97 in one of them. It seemed to me a most extraordinary state of affairs.

W. R. CRUST.

Enoggera, Australia, Oct. 2, 1902.

HOW BEES PACK POLLEN.

I note from the new edition of the A B C that you still cling to the old idea that bees pack the pollen in the cells by utilizing their heads as a battering-ram; but I can assure you they do nothing of the kind. The facts are, that, as soon as a field-bee has kicked off the pellets into a cell, another bee comes along and distributes the pollen slowly and evenly with the aid of its tongue—simply plastering it as it were. I have watched them scores of times at this interesting occupation; and any one who possesses an observatory hive can do likewise and prove the facts himself. When bees become crowded for room in an observatory hive they will frequently build some cells on the glass; and as the glass will thus form one side of the cells, many interesting events connected with the internal

arrangement of the hive can be observed. There is no doubt about it, friend Root, that the tongue is the only implement used in packing the pollen so neatly, and you can safely make a note of it for the next revision of that magnificent work, the A B C of Bee Culture. H. L. JONES.

Goodna, Australia, April 11.

WHY HONEY IN SMALL DOSES MAY BE HURTFUL WHEN IN LARGE DOSES IT IS BENEFICIAL; AN INTERESTING AND POSSIBLE SOLUTION OF SOME OF THE QUEER PHENOMENA OF DIGESTION.

I am going to explain why your lemonade did not hurt you. Several years ago I was keeping bees at my wife's father's farm. He kept bees also, and loved honey, but said it hurt him so he could not eat it. I asked him *how* it hurt him. He said it soured in his stomach, and caused bloating. I asked him how much he ate. He said, "About a tablespoonful." I told him his stomach was heavily charged with acid, and when he ate only a spoonful of honey it was overcome by the acid, and this turned to acid also; but I said that, if he would eat a sufficient quantity to overcome the acid, it would not hurt him. He scoffed at the idea; but when I persuaded him to eat all he wanted, there was no bad effect whatever from it; and as long as he ate enough to overcome the acid it never hurt him afterward.

In your case you carried an excess of alkali; and when you drank a glass of lemonade, and were satisfied it would hurt you, you were not disappointed, for the alkali soon overpowered the acid, and thus turned *that* to alkali, which added just that much more to your misery and discomfort. But just as soon as you drank the lemonade in sufficient quantity to overcome the alkali, and turn it to acid, then the machine was reversed, so to speak, and thus you received *special* benefit from the same acid that was working the injury, because it was kept under subjection by the superior quantity of alkali, and not because you *thought* the lemonade would hurt you, and it *did*, or that you *thought* it would not and it did not. Think of it in this light, and see if you do not see it as it is.

ELIAS FOX.

Hillsboro, Wis., July 9, 1903.

[I do not know much about the presence of alkali or acid in the stomach; but if either does exist in undue proportions at one time and another under some conditions, then your solution of the apparent paradox by overpowering an alkali with an overdose of acid, or the reverse, is correct. As a general rule in my case, a small amount of any one thing is not hurtful, while a large quantity is decidedly so. Perhaps when I become older I shall come to know something of what it is to have an excess of alkali or an excess of acid. This is a very interesting theme, and I hope our brethren of the medical profession, as well as the professors of anatomy and hygiene in our colleges, will give us something further on this subject. Among our bee-keeping fraternity we have professional men—men who have taken up bees as a pastime, and yet who are away up in the science of medicine and anatomy.—ED.]

A RED-CLOVER QUEEN THAT BROUGHT IN 110 LBS. OF HONEY IN TEN DAYS.

I see in GLEANINGS that you have a queen that you marked $50, judging her by her works. Now, I have a red-clover queen that I received as a premium for GLEANINGS, whose bees brought in 110 lbs. of red-raspberry honey in ten days as follows:

May 28, 10 lbs; May 29, cold, 7; May 30, cold, 5; May 31, cold, 8; June 1, 13; June 2, 11; June 3, 16; June 4, 18; June 5, 11; June 6, 11. Total, 110 lbs.

It has rained most of the time in June. Can you go ahead of such a queen?

R. D. HORTON.

Blossburg, Pa., June 30.

Bee-keepers' Picnic.

The Ontario County bee-keepers will hold a picnic Aug. 29 at Willowgrove, situated on the shores of the beautiful Canadaigua Lake. To make a round trip on this lake is well worth the time and money it costs. We cordially invite all the bee-keepers living within easy reach of Willowgrove to attend. Steamboats leave Canadaigua and Woodville regularly.

F. GREINER,
Sec. Ont. Co., N. Y., B. K. Association.

FARMERS' NATIONAL CONGRESS.

Arrangements are well under way for the 24th annual meeting of the National Farmers' Congress, at Niagara Falls, beginning Sept. 22. To judge from the efforts put forth by the officers, an instructive and interesting session may be expected. President Flanders informs us that the following gentlemen have accepted invitations to deliver addresses: Maj. G. D. Purse, Savannah, Ga., "Sugar Supply in the United States." Hon. Timothy L. Woodruff, Brooklyn. "Agricultural Conditions Understood to Exist in our Insular Possessions, and the Possibilities in Their Development." O. P. Austin, chief of the Bureau of Statistics, Washington, D. C., "Farm Products in the Markets of the World." Dr. D. E. Salmon, Washington, D. C., "Infectious and Contagious Diseases of Farm Animals and their Effect on American Agriculture." Prof. T. M. Webster, Urbana, Ill. "Diseases and Insect Pests of Plants and their Effect on American Agriculture." James Wood, Mt Kisco, N. Y., "How Can We Enlarge Our Foreign Markets for Farm Products?" Aaron Jones, South Bend, Ind., "Extension of the Facilities of our Mail System."

Gov. Odell will deliver the address of welcome, and the response will be made by Hon. Harvie Jordan, Monticello, Ga., first vice-president of the congress.

Twenty-four years this national body has co-operated with the other organizations of the United States in the betterment of agriculture, and in making the life of the farmer more pleasant, more profitable, and, if possible, more honorable. You will notice by the subjects chosen, and the speakers assigned, that this organization is not an institute, but deals with the relations of the agriculturists to the other professions.

The delegates are commissioned by the governors of the several States, and any farmer is eligible to appointment.

For information in regard to appointment as delegates, write to John M. Stahl, Secretary, 4328 Langley Avenue, Chicago, Illinois.

Remember the date, September 22 to October 10, 1903.

Excursion rates on all railroads, on the certificate plan. J. H. REYNOLDS, Treasurer.

So God created man in his own image, in the image of God created he him.—GEN. 1: 27.

God is a creator; he is *the* creator. He has been called the great Architect of the universe; and when the human mind expands and gets a faint glimpse of all there is to be learned and discovered in this vast universe, I do not wonder that we get "rattled," and think there must be more than one God, or that his great task must be divided up in some way, as men divide up duties and great responsibilities.

Well, if God is a creator, and man is made in his own image, then man must be a creator also; and one who looks abroad and sees what man is doing just now may well stand appalled, and lost in wonder at what is going on.

This thought brings me to my present theme, the wonderful—nay, *startling*—things that little humanity is just now doing as a creator, or, if you choose, in following in the footsteps of God as a creator. The astronomer Kepler many years ago said it was a delight to him to be permitted to think the thoughts God had thought, and follow in the footsteps where God had trodden.

A few days ago I visited the Olds automobile works at Lansing, Mich. I shall not attempt to give you the dimensions of their great buildings, but will only say that they are just now putting walls up around what looks like great fields, and these "fields" are to be roofed over to make room for more men and machinery. Between 500 and 600 men are now employed, and about 20 new machines are turned out every day.

Like the Waltham watches of old, every part is made so accurately to gauge that any part fits any machine; even the little tapering pins of tempered polished steel are just tight enough, and not too tight (that the machine may all be taken apart when necessary), no matter in what machine they may be placed. Long rows of expensive machinery, all making the same thing, are found in room after room. In one great apartment the engines are set up and tested. When we were there, there were 44 side by side, humming away almost like mad. I presume they are run here at their highest speed, and made to show up any defect if there is any.

The thing that concerned me most was a vast apartment called "The Hospital," a place where "sick machines" are "diagnosed" and cured. I could not keep the thought out of my mind, nor help wondering, if some time in the great future our doctors will not learn how to "take apart" the human frame and form, and see *exactly* what the matter is, and then put in a new piece or repair the old one, as skillfully and securely as the men and boys do here. On this big floor there are all the time a dozen or more machines. Some are almost brand-new, while others are old from use, and, *may be*, hard usage. Sometimes it is a very laborious task to get at a trifling breakdown.

After we left, and were 40 miles away, we found our water-pump did not work. It took only two or three hours to get back to the factory. The machine had to be nearly all taken down to get at the mischief and put a new piece in place of the broken one. While improvements are being made constantly, the company are striving very hard to have each change so made that the improved piece will fit exactly all the old machines when repairs are needed. If you think of it a little you will find this is often an exceedingly difficult matter.

I love machinery, and have always loved it from a child; but just now I love humanity more. The bright young men in the prime of life, skilled mechanics, were a study to me. I had permission from the office to go everywhere, even when "No Admittance" was over the doors, and to ask questions about the work. Our job was a pretty hard one, and a case rather unusual. As we were in a great hurry to get off, two young men went at it together. I wondered at the skill and rapidity with which they took out the screws, untwisted the wires, removed the bolts, etc. And then I watched to see how they would avoid losing any of these little and delicate parts. The screws and nuts were all dumped in a box, for all the screws, nuts, etc., are made to an exact gauge, and any one of the same kind fits anywhere. When the break was exposed to view, one of their most skillful experts was called. He was a quiet, careful, gray-headed man. One of the boys said, "He will make it come if any man in the shop can; he works slowly and carefully, but he always succeeds."

I wonder if those boys all stop to think how much better this is than to rush ahead, break tools, and perhaps get mad, and swear. I heard some bad words at the factory, but not many.

It may be well to explain that a steel screw was broken off in the end of the engine-shaft. Of course, the broken piece had to be removed before the new screw could be put in. A drill was selected as large as could be used without cutting through the broken screw. After drilling perhaps half an inch, a tapering square punch of tempered steel was driven into the hole just drilled. This punch was of such a size that the sharp square corners held securely in the broken screw. A wrench was then applied to the punch, and the broken part came out without injury to the shaft.

Every little while a job was finished, or supposed to be finished. Then the workman started the machine, and with his black and greasy hands full of tools, often with his hair flying in the wind, the ma-

chine was run out of the wide door, and tested on the race-course. The works are on the old Lansing fairgrounds, and this old race-course is just the place for testing machines. At almost every hour in the day one or more machines are flying around the track. Each man, evidently, takes pride in being able to make his machine do its best; and all together a sight of that busy workshop, and these new creations that seem almost like a thing of life, stirred my soul as it has not often been stirred. Let me digress a moment.

Man first went on foot; but he soon learned to appreciate a "ride" of some kind. If I am right, mules and asses, perhaps also camels, were one of the first inventions to improve on going on foot. Later, boats were invented, and perhaps wagons. Later still, horses were found to be the thing for speed, and then came buggies and carriages; but for long ages no invention of man could go on common roads faster than a horse. The wheel came, and is here yet (thank God); but this new thing, for travel, leaves *all* behind. Just now it is in the embryo; and not only the machine but the people. *The whole world* is rubbing its eyes and waking up, and slowly (shall I say sluggishly?) making room for it. I don't know who invented this machine. The credit probably belongs to a great many minds, but I am inclined to think the inventor, and the skilled mechanics who make the machines, have never recognized how nearly they have been following the works of God in this wonderful creation.

Let us see how much there is about it that is human-like. In the very center of it there is a pulsating, beating heart, the engine. There is a circulation to keep the machinery cool, but it is water instead of blood. It breathes air and consumes oxygen, just as we do. There are nerves of steel (piano wire) that run from every point of its construction up to the hands and feet of the operator. It has two big eyes (lamps) to see to run by night. It must have water, just about as much and as often as you give it to a horse. It doesn't need oats, it is true; but it needs gasoline (another of God's late and wonderful gifts), and this is consumed in the very "intestines" of the machine, to give mechanical force, just as the oats and corn give mechanical force. It gets hot when doing hard work, just as the horse or man gets heated by extra exertion. To do its best work it must have faithful and intelligent care, like the horse. If man is made in the image of God, is it so very strange that he has (even unwittingly) trodden in the footsteps of his Creator in making a machine that is so nearly human in its makeup? It lacks brains, it is true; but its maker is its brains, and holds its wonderful power at the tips of his fingers—and toes.

It was nearing noon time, and I felt the need of my accustomed nap. I found a quiet boarding-house, and a pretty young waiting-girl opened the door of a nice little room that I should call a study, judging from the books and papers, and told me I could rest on a pretty clean lounge until dinner was ready. I not only thanked my young friend, but I thanked God for such pretty and comfortable places and such people. Yes, I thanked God for *womankind* as well as for mankind. My couch was before an open window; this window was close to the race-course. As I dropped into oblivion, car after car whizzed past my window with its driver covered with black grease, and his hair flying in the wind, as I have told you. He forgot his hat and all else in his devotion to his machine. I was just thinking I loved him with all his dirty hands and greasy overalls, when the young girl at *her* work trilled out a little song that came in through the open window. Do you wonder that those thrills of joy and praise to God came over me again and again?*

I have been accused, you know, of writing up things and places in rosy colors, saying nothing about the "thorns;" but I am now going to speak of something worse than thorns right in and about that automobile works. I may have been exalting humanity a little too much. When I asked how much I owed for my very good dinner, and the use of that neat little room, the reply was, "Twenty cents." I tried to have them take 25, but was told 20 was the regular price. On my way back to the shops one of the men asked me how I liked their boarding-house, and then said something like this:

"Mr. Root, a widow has charge of the place, and she is trying hard to make a living, and she would come out all right if it weren't for the boys and men who slip off and don't pay their board-bills. There is quite a lot of help here that is going and coming. They stay a week or two weeks, and put her off with some good excuse, and then skip out."

I replied: "Why, is it possible you have people, those who call themselves *men*, who would thus impose on a weak woman who has lost her companion and natural protector? Are there those who are so lost to shame, strong men who would see this woman purchase food and then work hard to prepare it in such a wholesome and tempting way, and then sneak off without paying her?"

Can it be, friends, we have such men and *boys?* If so, *they* are not in God's image by a long sight. They are of the Devil's work

*I have told you about thanking God for his giving me a human life to live. As I sank to slumber I breathed that prayer again, and thanked God that, in his infinite love, he had given me a place, even while I am old and gray-headed, among the busy boys and girls of our land. And then I fell to wondering how it was possible that any human being should get weary of life — this wonderful gift. Yes, within the last few days two millionaires, I am told, have committed suicide. How is this possible for one who can get a glimpse of this great teeming universe, with its wondrous machinery and wonderful possibilities? Surely this can not happen to any soul that has once had even a glimpse of Christ Jesus and of God the Father, and of their *wonderful love* to humanity.

and workmanship, and the sooner they are consigned to his department and workshop the better, if they propose to continue in this way.

Now, if there is one who reads these pages who has not paid his board-bill, especially if it be due to some hard-working woman, will he not go this minute and settle it up? If you are a *man*, God made you in his image. Will you put him and all humanity to shame? My friend explained to me that it was a hard thing for the widow to require all these boys to pay in advance, but he feared she would have to do it.

Our machine was done. I climbed into the seat beside the man who put it up, and round it whizzed on the trial trip. When away over on the side of the race-course furthest from the factory, when every thing so far as I could see was all right, he jerked out an ejaculation, and stopped the machine so suddenly it nearly pitched me over the dashboard. Somebody had forgotten to fasten one of the wheels securely. The wrench he wanted was over at the shop; but he called to a comrade who was whizzing past, and the wrench was at hand in almost no time.

Besides the race-course test they have a steep incline on which the power to ascend a grade is tested. If a machine will go over this it is called up to standard in power.

When I first looked at that incline it seemed to me that no machine could go up it. But up they went aflying, and down again on the other side. Once in a while, however, a machine would be found deficient (we might say in wind); and when almost at the top it would have to back down again and go back to the hospital to have its wind mended. Oh if we could take weak and crippled human beings, and give them life and strength as they do these machines, what a grand thing it would be! Let me digress again a little right here:

The great Father above gave horses to humanity as beasts of burden. We do not know just what the horse was like when it came from the hand of God; but we do know that humanity, created in God's own image, grasped hold of the horse, as it were, and proceeded to fashion it according to his needs. See the trim light-footed racer; then contrast it with the heavy-limbed thickset draft horse. And man did this fashioning. Now, it occurs to me that man has not only been able to fashion the bones and muscles, but I think he has had much to do with shaping the intelligence of the horse.

Much has been said and written about frightening horses on the road with automobiles; and as I write, after an experience of four weeks through Michigan on the auto, I have had something to do with meeting horses. I have not only learned about autos, but I have studied horses, and I think I have become better acquainted with them than ever before. One day in going down a gentle incline at a pretty good speed, Huber and I saw a bright young horse coming toward us across the valley. Of course, he pricked up his ears and scanned us critically. At first it was curiosity on his part to know how a carriage could go at such speed as we were going, without a horse like himself to pull it. He was using his reason, or perhaps you may prefer to call it his "horse sense." Now, a cow or a pig or a sheep pays no attention to the swift-running auto at all. It is beyond their comprehension, or it is none of their affair, perhaps, whether the carriage goes of itself or has a horse to pull it. Not so with the intelligent horse. He is keenly alive to any thing unusual or to any thing not easily explained by his horse sense. This horse of which I am speaking eyed us first with curiosity, then alarm. When he got a little nearer it was consternation; and when he decided it must be a specter or some sort of hobgoblin to go thus of itself, his consternation turned to downright dismay and fright, and he started to flee in downright terror from the apparition. His owner may have called him a "fool." Some men swear at their horses just because the animals have this God-given intelligence that comes so near human knowledge. This is all wrong. I honor the horse because of his inquiring mind, and because he is frightened and demoralized when a cow would see nothing to be troubled about at all.

I have many times felt as if I should like to shake hands, not with the whole human race, but with the whole *horse* race. Huber was studying horses, like myself; and he finally suggested that if we would talk to the horses as we went by them they would be less afraid; and he succeeded nicely. When they heard a human voice coming from the machine in tones of kindness and sympathy they became reassured. When women were driving, and there seemed to be any trouble, I jumped out and led the horse past the machine. I never found a horse I could not lead close up to it by talking to the animal and rubbing its nose to reassure it. Dozens of times people were unnecessarily alarmed. They would jump out and hold the horse, lead him up a steep bank, or off into the field, when he paid no attention to the machine whatever, and was evidently wondering what they were all making such a fuss about. When we turned out as far as we could, and slowed down the power, making the machine run as still and quietly as possible, not one horse in ten made any trouble.

Now, this intelligence I have described, on the part of the horse, I believe is largely the result of man's work. People have been for ages breeding colts from mothers that showed unusual intelligence. There are horses that learn trades. We have one in our lumber-yard that pulls a car of lumber, then turns around of his own accord, and follows the car back. No one pays any attention to him, comparatively. But he is always on hand when a car is ready

to be pulled, and he knows just how to do the work. It would be as difficult to get another horse to take his place as to find a man on the spur of the moment to take the place of some of the experts in our manufacturing rooms.

Now, I have spoken of horses at length to illustrate the way in which man, as a creator, takes hold of where God, as a creator, leaves off. I need not tell you what has been done with other animals, and with plants and fruits, as well as with horses. Luther Burbank, of California, has given us new things in the way of fruits—creations that will probably be worth millions to the human family. Edison gave us our beautiful electric lights and the wonderful phonograph. I have wondered sometimes if I could comprehend the joy and satisfaction with which Edison, Burbank, and others see humanity reap the fruits of their toil. God said in the beginning, when he looked over his work of creation, that it was good. He was satisfied. May I suggest with due reverence that he felt glad as we feel glad when our inventions become a success? In the eighth chapter of Proverbs, where the writer is speaking of wisdom, there is a strange expression:

Then I was by him, as one brought up with him; and I was daily his delight, rejoicing always before him; rejoicing in the habitable part of his earth; and my delights were with the sons of men.

Let us now go back to that Olds automobile factory. I am not prepared to say that the Olds people made the *first* automobile. No one man man hardly ever made the first of any thing. Edison may have come very near it; but I think I may safely say the Olds people were among the first, if not the first, to make a successful machine—one that can be duplicated and sent out by the hundreds and thousands, a moving beast of burden (built by men) of iron and steel. They have opened up a new era in the way of transportation. It saddens me to see that a large part of humanity look with a jealous eye on this innovation. A woman said in my hearing, "I don't see why these awful things are allowed to run over the country." Before I could stop him, Huber flung back at her, "We have just as much right running over the country as you have." I told him that, even if this were true, we as Christian people should do every thing in our power to avoid annoying or troubling our fellow-men.

Some amusing occurrences happen now and then. At a country store where we stopped to get water, one of the crowd said, "You don't catch *me* riding after one of them things. Why, just a few days ago one of them got away from the fellow that run it, and got off into a man's dooryard; then it ran under the clothesline, scraped the people all out, and then went ransacking over the fields tearing down fences and every thing." When we got out of sight, Huber and I laughed until we felt sore over the sad tale, especially about running under the clothesline. One who has run an automobile knows it is utterly impossible for the machine to run with the driver out of his seat.

And now, dear reader, in closing this long story may I express a wish that it has given you a glimpse that may induce you to love and reverence more God the Father and Creator? and that you may also love and have more charity for poor humanity, including also the horses and all these other great and wonderful gifts he has given us to fashion in a way to serve us best? And may my story help us so that, in using all these gifts, we may reconcile our differences, and go forward with love and kindness in our hearts toward all, whether we drive this wonderful new creation, the automobile, or whether we handle the faithful horse over the new and *better roads* that God is giving us *through* the hands of humanity whom he has created, with the thought in his infinite mind of the things which, through his help, *we* may and are also creating.

I have already mentioned our visit to Mr. H. Wilber's, at Morenci, Mich.; but I omitted to speak of the beautiful gloxinias grown by Mrs. Wilber in a north window of an ordinary farmhouse home. When I first saw them there was such a profusion of the gorgeous bloom that I thought they must be artificial flowers stuck in the rich black woods dirt to deceive people. If I remember correctly they were grown in a heavy square pasteboard box; but she hastened to bring them over to the dining-table where we were sitting, to convince me they were God's handiwork, and not the work of man. I have tried many times growing gloxinias in the greenhouse, but have always failed, and I know that many greenhouse men find it quite difficult, especially to make such a brilliant success of it. I expect Mrs. W. to give us some instructions in regard to growing them, later on.

Our invitation to call at the Wilber home was from a little girl. As her letter is brief I give it here.

Dear Sir:—I am a little girl nine years old. I am Henry Wilber's grand-daughter. I thought I would write and ask you to come and see us on your way to the cabin in the woods. Mamma and I go to Sunday-school every Sunday if I am not sick; and mamma likes to read your Home talks in GLEANINGS.

MISS VERA WILBER.

We made a rather longer stop at friend Wilber's, and also at O. M. Jefferson's, at Pittsford, Mich., because of some needed repairs to our machine. I have already mentioned burning out the packing to the cylinder because a rubber tube swung against a brass cock and wore a hole through it. I think this fault has been

remedied by the makers already. The packing we got at the hardware stores was not suitable for standing such a degree of heat, so we had to replace it at Pittsford. Both of our bee-keeping friends seemed to be well pleased at having us make a longer stop.

I might mention here that the first time we put in new packing we made nearly half a day's job of it. The next time we did it in about an hour, and I think we could do it now in considerably less time than that. When we got to the factory at Lansing we found that they had recently got hold of a packing that would stand the heat better, even if the water did get out.

Friend Jefferson is in many respects a remarkable man, and, in fact, I don't know but I might say that of almost all the bee-keepers. They are progressive, well-informed men, and, almost without exception, men of good habits.

As we were over Sunday at Pittsford, I talked to the children briefly about the missionary work in Cuba, or, rather, the vast field for missionary work, and closed with one verse from "What a Friend we have in Jesus," in Spanish. For such a small town the church was remarkably well filled, and we were favored with a sermon far beyond what we might expect in such a little country town.

At Hudson, Mich., we called briefly on Mr. E. E. Smith. Mrs. Smith is not quite so much of an enthusiast on bee-keeping as her husband; and when I suggested that bees, like berries, were one of God's gifts, she ventured the remark that, while God gives the berries, without doubt, sometimes she was inclined to think that he didn't have any thing to do with bees. She probably referred to the stings. After Huber had taken her for a short ride on the automobile I think she was inclined to agree with me that it was certainly one of God's latest gifts.

We made a short call on our afflicted veteran in bee culture, H. D. Cutting, at Tecumseh, Mich., who is at present entirely blind. Even with this great affliction, however, he has his old genial hearty way, and seems comparatively happy and contented; and if any thing could atone for his loss of sight he has it in a large degree in his beautiful home, and wife and children. When I asked him how he kept busy he showed me his garden, and especially his peach-trees that he is caring for. It made me think of my own peach-orchard where I love to work so much around the cabin in the woods; but may God help me if I ever have to bear such a cross as does friend Cutting.

Charles S. Foote, of Ridgeway, near Tecumseh, has also a most beautiful home and family; and although he is holding one or more public offices he is quite a successful bee-keeper. He is successor to his wife's father, the late John T. Temple.

Milan, Mich., the home of Mr. M. Vincent, is quite a pretty little country town. Down near the river they have artesian wells that elevate the water eight or ten feet above the surface of the river. By the use of hydraulic rams the water is raised into tanks to supply the town. In passing through his very pretty garden and apiary Huber was stung on the neck. This would be a very small matter were it not for the fact that, whenever he is stung, the poison almost always threatens to interfere with his breathing apparatus. Perhaps I might explain here that, while bee-stings have for years troubled me less than mosquito-bites, Mrs. Root has never yet in all the years past, while we have had so much to do with bees, become so immune to the effects of the poison but that a single sting generally makes her sick. While I still think she might in time, by repeated stings, get so that it would not affect her, we have for years thought best to prevent her being stung as much as possible. Ernest had a similar experience when he first began working with bees, but now they seldom trouble him more than they do myself. Huber seems to take after his mother; and since the experience at friend Vincent's I have thought best to have him keep away from the bees unless well protected by a veil. When the effects of the sting seem to interfere with the breathing I think it's best to use caution, and I presume every one should know that several deaths have occurred from being stung on the neck in such a way that the swelling closes the air-passages. Huber was in such distress for a time that we were glad to call in a doctor whose office was only next door. Perhaps as much was due to the kind motherly offices of Mrs. Vincent as to the doctor.

We had a very pleasant visit at the old home of our Mr. Arthur L. Boyden, Secretary of The A. I. Root Co , and joint partner with Blue Eyes in possessing the two youngest grandsons that I told you about. We spent the night at Mr. Ralph Boyden's, Chelsea, Mich. Mr. B. has a flowing well that fills a barrel in just 20 seconds. It will send this volume of water 8 feet above the surface. When they were talking about piping it to the barn across the road, the man who drilled the well said he would sink another well over by the barn for less than the pipe would cost that would carry it across, and he did so. These two wells are on an elevation perhaps twelve or fifteen feet higher than a muck swamp where onions are grown very successfully; and I was surprised to learn that no thrips, smut, rot, nor any other disease or insect enemy has ever prevented them from getting a fine crop. The onion land in this vicinity, it seems to me, offers wonderful facilities to onion-growers.

At Grass Lake, Jackson Co., we were right in the midst of the huckleberry harvest. We were told that, the day before, 50 bushels had been gathered and shipped. I might add here that the huckleberry industry flourishes more or less almost all over Michigan. It gives employment to

thousands of people for many weeks. At Grass Lake they said that a woman and her little girl made $4.50 in a day picking berries.

W. D. Soper, near Jackson, Mich., is one of the veterans in our ranks. Besides the bees, he is quite a strawberry-man, and has a considerable farm. The automobile, with its back seat for the children, proved quite entertaining wherever we went.

Alma, Mich., is a very pretty and progressive town. Its principal wealth is the result of the active work of a millionaire, now 80 years old, or more, though still active and full of business. We are greatly indebted to Mr. Wyman Stanton for showing us around, and explaining things to us by the use of a beautiful up-to-date gravel road, on which we could make a mile in three minutes without any trouble. After we had entertained the Stanton children with the automobile, they entertained us with music on the organ while we partook of an excellent supper. One of his little girls, I should say not more than ten or twelve years old, played some marches that I had either heard years ago or else something much like them, that made me thank God again and again for the glimpses he has seen fit to give me of the rural homes throughout our land. I looked at the child in mute wonder that it was possible for one so young to touch the keys with such wondrous skill and feeling. I often feel sad to think I can't appreciate classical music; but I don't feel sad a bit when I realize how much I enjoy hearing the children play, especially where childish voices are mingled with the childish effort on the instrument.

Friend Stanton expects to give his children a musical education; but I am really afraid that I should enjoy their playing more as it is now than after they have been to the schools.

Queens == 1903 == Queens.

We have ten different yards five to twenty miles apart, where Italians, Cyprians, Holylands, Carniolans, and Albinos, are bred for business. Tested queens, $1.50; $8.00 for 6; $15.00 per dozen. Untested, $1.00 each; $5.00 for 6; $9.00 per dozen. Our best and finest breeders, $5.00 each. One and two frame nuclei a specialty. Bees and Queens in any quantity to suit purchaser. Safe arrival and reasonable satisfaction guaranteed. **ORDER** "The Southland Queen," $1.00 per year. Send for sample copy and our 1903 catalog; tells how to raise queens and keep bees for profit.

Root's Supplies.

The Jennie Atchley Co., Box 18, Beeville, Tex.

Red Clover and Three and Five-Banded Queens.

Untested, 65 cts.; 2 for $1.00. Fine tested queens, $1.00 each. Remember we guarantee our queens to work red clover as well as white clover. Get my circular. Plenty of queens, and go by return mail. Fifty and one hundred, special prices.

G. ROUTZAHN, BIGLERVILLE, ROUTE 3, PENN.

Long Tongues Valuable

South as well as North.

How Moore's strain of Italians roll in honey down in Texas.

Hutto, Tex., Nov. 19, 1902.

J. P. Moore.—Dear Sir:—I wish to write you in regard to queens purchased of you. I could have written sooner, but I wanted to test them thoroughly and see if they had those remarkable qualities of a three-banded Italian bee. I must confess to you I am more surprised every day as I watch them. They simply "roll the honey in." It seems that they get honey where others are idle or trying to rob; and for gentleness of handling, I have never seen the like. Friend E. R. Root was right when he said your bees have the longest tongues; for they get honey where others fail. I will express my thanks for such queens. I am more than pleased. I will stock my out-apiaries next spring with your queens. Yours truly,

HENRY SCHMIDT.

The above is pretty strong evidence that red clover is not the only plant which requires long tongued bees to secure the greatest quantity of nectar.

Daughters of my 23-100 breeder, the prize-winner, and other choice breeders: Untested, 75c each; six, $4.00; dozen, $7.50. Select untested, $1.00 each; six, $5; dozen, $9.00. Safe arrival and satisfaction guaranteed. Circular free. I am now filling orders by return mail, and shall probably be able to do so till the close of the season.

J. P. Moore, L. Box 1, Morgan, Kentucky.

Pendleton County.

Laws' Leather-colored Queens.
Laws' Improved Golden Queens.
Laws' Holy Land Queens.

W. H. Laws:—Your queens have proved to be *excellent*. My apiary stocked with your *Leather* queens are a sight to behold during a honey-flow, and the *Goldens* are beyond description in the line of beauty. Yours are the *best for comb honey* I ever saw. I want more this spring.—*E. A. Ribble, Roxton, Tex., Feb. 19, 1903.*

W. H. Laws:—The 75 queens (Leather) from you are dandies. I introduced one into a weak nucleus in May, and in September I took 285 lbs. of honey, leaving 48 lbs for winter. My crop of honey last season was 48,000 lbs. I write you for prices on 50 nuclei and 150 Leather queens.—*Joseph Farnsworth, Idaho Falls, Idaho, Feb. 16, 1903.*

Prices of Queens: Each, $1.00; 12, $10.00. Breeders, extra fine, guaranteed, each $3.00. Send for price list.

W. H. Laws, Beeville, Texas.

The Best Honey Queens
ON RECORD

Are those reared by The HONEY & BEE CO., Will Atchley, Manager. We breed six distinct races in their purity, from 6 to 35 miles apart, queens ready to go now. We make a specialty of one, two, and three frame nuclei and queens in large lots. Write for prices, they will astonish you. Untested queens of either race, 75c each; $4.25 for six; $8.00 per dozen. Tested, $1.50 to $3.00 each. Breeders, the best that money can buy, $5.00 each. We guarantee safe arrival and perfect satisfaction. Address all orders to

The BEE & HONEY CO.,
Beeville, Box 79. Bee Co., Tex.